



Worcester College
UNIVERSITY OF OXFORD

Oxford Certificate Programmes

University Programme Summer 2024

Information Session



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Worcester College
UNIVERSITY OF OXFORD

1. Welcome to Worcester College



At just over 300 years old, Worcester College is one of the University's 'newer' colleges.

However, it was founded on the site of a much older Benedictine monastery and academic hall and many of the buildings date from the 13th century.

Worcester has a proud history and many distinguished alumni, as well as world-famous members of the faculty.

Worcester was founded in 1714 and has c. 400 undergraduate and 200 postgraduate students across all sciences and humanities degrees.



1. Welcome to Worcester College

Certificate Programmes at Worcester College

- Certificate Programmes are the non-degree educational programmes offered by Worcester
- Certificate Programmes are offered during the Easter vacation and the Long Summer vacation (August and September)
- Certificate Programmes are offered at the High School level, for University students, and at the executive level
- Co-Directors of the Programmes are Prof Dominik Wanner and Mr Wilf Stephenson





2. Your Programme at a Glance

- **Dates**

Session 0: 14 July - 27 July 2024

Session 1: 28 July – 10 August 2024

Session 2: 11 August – 24 August 2024

Session 3: 25 August – 7 September 2024

- **Pricing**

Participation Fee (tuition, board and twin room lodging): 4,180 GBP

Participation Fee (tuition, board and single room lodging): 4,380 GBP

Worcester College is offering students from partner universities a scholarship in the amount of 500 GBP.



2. Your Programme at a Glance

- **Academic Content Offered**

Session 0

-English and International Law

Session 1

- Law I (Legal Theory and IP Rights)
- Law II (Dispute Settlement)
- Economics I (Development Economics)
- Economics II (Behavioural Economics)
- International Relations I (Western political theory in the face of the future)
- International Relations II (International Organisations and the Post-Brexit EU)

Session 2

- Economics III (Game Theory)
- Economics IV (Financial Crisis)
- AI I (Machine Learning)
- AI II (Deep Learning)
- Business I (Leadership)
- Business II (Strategic Management)

Session 3

- AI III (Knowledge Based AI I)
- AI IV (Knowledge Based AI II)
- Global Health & Planetary Health
- AI and the Future of Health



3. Your Programme: Academic Content

- All Students who complete the course will receive a Certificate of Attendance & Academic Transcript issued by Worcester College (University of Oxford)
- Class Sizes are small, as is common according to Oxford's tutorial model to maximise learning: your classes will be between 3 and 20 students





3. Your Programme: Academic Content

Law I (Legal Theory)

The legal theory course will provide an in-depth knowledge of the functions of the rule of law in common law jurisdictions, as well as to consider law in a practical manner. These lectures analyse the nature and importance of rules in legal systems and examine some of the main difficulties associated with the implementation of laws, rules, and regulations.

Academics



Prof Keith Hawkins
Emeritus Professor of Law and Society
Oriental College, University of Oxford



3. Your Programme: Academic Content

Law I (IP Rights Management)

The course in intellectual property law aims to give students a general overview of the three main regimes of IP, copyright, patents and trademarks. This will include discussions on the justifications of intellectual property; the requirements necessary to garner protection for literary or artistic works, inventions and brand logos; the infringement of these various rights; and the remedies available.

Academics



Dr Robert Pitkethly
Fellow and Tutor in Management
St Peter's College, University of Oxford



3. Your Programme: Academic Content

Law II (International Dispute Resolution)

The first part of this course addresses the role of international and regional organisations in dispute settlement. The course then explores the diplomatic or non-judicial means of dispute settlement: negotiation, mediation, inquiry, and conciliation.

The second part of the course concerns the advancement of international criminal justice and settlement of disputes through a range of international courts and tribunals, in particular the International Court of Justice, International Criminal Court, and various international criminal tribunals that have been established up to date.

Academics



Dr Rudina Jasini
Attorney and Researcher in Law
Green Templeton College
University of Oxford



3. Your Programme: Academic Content

Economics I (Development Economics)

This course will allow students to appreciate the range of influences that bear upon development economics, both at the individual and group level. International agencies, governments and the private sector all have a role to play in this field, which is one where economic theory and economic practice can often seem most at odds. This course will use real life case studies to show the strengths and weaknesses of economic strategies for the developing world.

Academics



Dr Donna Harris
Research Fellow
Centre for the Study of African Economies
Director of Studies in Political Economy
Department for Continuing Education
University of Oxford



3. Your Programme: Academic Content

Economics II (Behavioural Economics)

Behavioural economics enriches standard economics with insights from psychology to build a more realistic understanding of how and why people behave the way they do in the real world. The objective of this course is to introduce students to principles, methods, and recent advances in behavioural economics. It will be structured around how people systematically deviate from neoclassical models in terms of (1) preferences (e.g., self-control problems, reference dependence), (2) beliefs (e.g., overconfidence), and (3) decision-making (e.g., limited attention), with an emphasis on real-world applications to topics such as household finance, job search/workplace behaviour, and climate change.

Academics



Dr Ximeng Fang
Postdoctoral Research Fellow
Saïd Business School
University of Oxford



3. Your Programme: Academic Content

International Relations I: Western political theory in the face of the future

This course will both introduce the structures by which western states and their politics operate by, whilst also interpreting current trends and comparison with other systems, especially in Asia. The course will begin with an overview analysis of the modern Western state and politics within it, and especially how these states are organised. From this foundation, students will comprehend the extent to which western states are accountable to their citizens and each other within supranational structures. The course will then compare this state organisation and context with the varying trends and political systems in Asia, including Japan, South Korea and the People's Republic of China.

Academics



Prof John Dunn
Emeritus Professor of
Political Theory
Department of Politics
and International Studies
University of Cambridge
Visiting Professor
Graduate School of
Social Sciences and Humanities
Chiba University, Japan



Serafijn Gentiles
Doctoral Candidate in
Area Studies (China)
University of Oxford
Former Brexit Analyst
Former EU Office of
Hong Kong



3. Your Programme: Academic Content

International Relations II: International Organisations and the Post-Brexit EU

This course will at once demonstrate the shortfalls and potential benefits of international organisations to the international community and its citizens. This course will use case studies to compare these organisations, allowing participants to receive practical lessons on how to improve institutional effectiveness and cooperation between policymakers, NGOs, businesses, and citizens. This course will specifically delve into the current state of the EU post Brexit and its relations with the wider world as a specific case study.

Academics



Prof John Dunn
Emeritus Professor of
Political Theory
Department of Politics
and International Studies
University of Cambridge
Visiting Professor
Graduate School of
Social Sciences and Humanities
Chiba University, Japan



Serafijn Gentiles
Doctoral Candidate in
Area Studies (China)
University of Oxford
Former Brexit Analyst
Former EU Office of
Hong Kong



3. Your Programme: Academic Content

Economics III (Game Theory)

Participants will study the main concepts of game theory and in-depth applications. Simultaneous and dynamic games will be covered, including the theoretical study of Nash equilibria of various forms, and experimental findings. Auctions in theory and practice will demonstrate how economists use game theory to study market pressures and devise optimal strategies. Using these structures, we will analyze the options 'players' consider, and why they have the incentive to choose a particular option, and then we will assess how this methodology played out in real life case studies.

Academics



Dr Charles Roddy
Director of Studies
Governing Body Fellow
Sidney Sussex College
University of Cambridge



3. Your Programme: Academic Content

Economics IV (Financial Economics)

This course will familiarise participants with current trends and look deeper at individual practices, methods and financial instruments within the finance sector. Students will develop an understanding of today's markets and the forces influencing growth and recession. By looking at case studies, students will be able to identify market trends and analyse problems emerging in the economy as a whole.

Academics



Dr Charles Roddy
Director of Studies
Governing Body Fellow
Sidney Sussex College
University of Cambridge



3. Your Programme: Academic Content

Economics V (Financial Crisis)

The objective of this course is to provide an overview of the causes and the events of the recent financial crisis, as well as of the policy response by governments and central banks. The first two lectures will discuss the critical aspects of the evolution of financial markets and institutions that have led to the crisis. The next two lectures will go over the events of the crisis and the actions undertaken by government and central banks around the world. The fifth lecture will recap before the multiple-choice test. The last two lectures will put the recent crisis in a historical perspective and compare alternative views on the causes of the crisis.

Academics



Andrew Farlow
Senior Research Fellow
Oxford Martin School
University of Oxford



3. Your Programme: Academic Content

AI I (Machine Learning)

Machine learning is a field of scientific study concerned with algorithmic techniques that enable machines to learn performance on a given task via the discovery of patterns or regularities in exemplary data. Consequently, its methods commonly draw upon a statistical basis in conjunction with the computational capabilities of modern computing hardware. This course aims to acquaint the student with the main branches of machine learning and provide a thorough introduction to the most widely used approaches and methods in this field.

Academics



Dr Vincent Harinam
Fellow of the Cambridge Centre for
Evidence Based Policing
Law Enforcement Consultant
Supervisor, Applied Criminology and
Police Management
University of Cambridge



3. Your Programme: Academic Content

AI II (Deep Learning)

Neural networks and deep learning approaches have revolutionized the fields of data science and artificial intelligence in recent years, and applications built on these techniques have reached or surpassed human performance in many specialized applications. After a short review of the origins of neural networks and deep learning, this course will cover the most common neural network architectures and discuss in detail how neural networks are trained using dedicated data samples, avoiding common pitfalls such as overtraining. The course includes a detailed overview of alternative methods to train neural networks and further network architectures which are relevant in a wide range of specialized application scenarios.

Academics



Dr Vincent Harinam
Fellow of the Cambridge Centre for
Evidence Based Policing
Law Enforcement Consultant
Supervisor, Applied Criminology and
Police Management
University of Cambridge



3. Your Programme: Academic Content

Business I (Leadership)

In today's knowledge-based society, employees are a firm's most valuable resource. A key responsibility of leadership is to develop the knowledge, expertise, and skills of employees. Good leadership is crucial for the continued success of a firm in the face of increasingly competitive markets. This course presents the necessary competencies of the leader in a modern, knowledge-based organization. Central questions raised by modern leadership theory are presented and discussed. In doing so, the course focuses on requirements and instruments of professional leadership, aspects of situational leadership, and leadership communication and interactions, both in the context of strategic management and change processes. The methodological and conceptual foundations of leadership are presented to students, along with empirical examples and best-practice principles, with the intent for students to master the challenges of enhancing the firm's most valuable asset—its employees—via professional and contemporary leadership practices.

Academics



Dr Eva Schlindwein
Saïd Business School
University of Oxford



Prof Nir Vulkan
Saïd Business School
University of Oxford



3. Your Programme: Academic Content

Business II (Strategic Management)

Various methods of strategic market analysis are presented in this course so as to allow students to evaluate risks and opportunities in global markets, highlighting intercultural aspects, by looking at organizations operating in different countries. Students learn to analyse and understand strengths and weaknesses of organizations from various disciplines (products, services, NGOs etc.) that face specific market situations. Supported by new developments in the field of market research, the process for identifying and analysing core competencies and competitive advantages in national and international environments is discussed at length. Students are supported to plan strategic alternatives and to implement and control these by taking on fictitious roles within various different organizations. Exercises and international case studies help students to identify with the role of management and participate in the strategic planning process as well as in operational management. This helps students understand the problems companies regularly face and comprehend how methods of modern management can be used in order to solve these.

Academics



Dr Eva Schlindwein
Saïd Business School
University of Oxford



Prof Nir Vulkan
Saïd Business School
University of Oxford



3. Your Programme: Academic Content

AI III (Knowledge Based AI I)

This course has a particular focus on search as the fundamental technique for solving AI problems. It will introduce AI search techniques, such as depth-first, breadth-first, and iterative deepening search, and it will discuss heuristic techniques such as A* search that improves efficiency by pruning the search space. This course also deals with optimization problems, and it will introduce a standardized language called STRIPS for modelling planning problems, before discussing how to solve planning problems using search techniques such as forward chaining, backward chaining, and partial order planning. Constraint satisfaction problems (CSPs) constitute another important class of AI problems, and so this course will also introduce search techniques such as backtracking and constraint propagation that can efficiently solve many CSP problems in practice.

Academics



Dr David Cucala
Research Associate
Department of Computer Science
University of Oxford



3. Your Programme: Academic Content

AI IV (Knowledge Based AI II)

This course will initially introduce basic game-playing techniques such as minimax search and alpha-beta pruning, building on the previous week. Dealing with unknown or incompletely specified environments is a form of intelligent behaviour that is critical in many intelligent systems. For example, consider a robot in maze that has no prior knowledge about the maze layout. To solve the problem, the robot needs to represent and update its knowledge about the maze as it moves through the maze. This course will show how to solve such problems via search in the belief space – the space of all possible beliefs the robot may have about the maze layout. The course will then cover knowledge representation and reasoning as well as modern topics involving knowledge graphs, before the students move on to assessment.

Academics



Prof Bernardo Grau
Professor of Computer Science
Admissions Coordinator
Tutorial Fellow, Keble College
University of Oxford



3. Your Programme: Academic Content

Global Health and Planetary Health

This week-long programme is offered by Worcester College, one of the constituent colleges of the University of Oxford, in partnership with Global Health Policy Partnership. It will offer participants a comprehensive analysis of the changing state of the world's health and look into future trends and developments deep into the 21st century. It will explore what has been achieved, and what remains to be achieved, in tackling big health challenges such as health inequalities, epidemics and pandemics, disease eradication, antimicrobial resistance, and the growing burden of non-communicable diseases especially those associated with lifestyle and the environment. It will explore human impact on the health of the planet – including climate change, pollution, urban living, food systems, and ecosystem health – and the impact of that on human health. It will give an overview of the research and development of new interventions, deploy numerous case studies, review how policy is made, and help participants identify ways to improve their own health and that of the planet and their fellow human beings.

These lectures and discussions will be coupled with an accompanying cultural enrichment programme and social calendar to facilitate further discussion. Evening guest speakers and visits to museums and galleries related to these lectures will ensure that this programme is truly holistic in its outlook, and that it will maximise the potential benefits for its participants.

Academics



Andrew Farlow
Senior Research Fellow
Oxford Martin School
University of Oxford



3. Your Programme: Academic Content

AI and the Future of Health

It seems that AI is everywhere, and human health has become a hotspot for the development and scale up of AI. This week-long programme offered by Worcester College, one of the constituent colleges of the University of Oxford, in partnership with Global Health Policy Partnership will separate reality from hype. It will review where we are with the application of AI to health, the opportunities as well as the many challenges. It will review the critical ethical frameworks needed to support AI for health, data and AI solutions handling and assessment, benchmarking tools, regulatory frameworks, tools for the clinical evaluation of AI applications for health, the use of open code to enable broad and fair development, IPR (intellectual property rights), health technology assessment and economics, and innovation in AI for health.

These lectures and discussions will be coupled with an accompanying cultural enrichment programme and social calendar to facilitate further discussion. Evening guest speakers and visits to museums and galleries related to these lectures will ensure that this programme is truly holistic in its outlook, and that it will maximise the potential benefits for its participants.

Academics



Andrew Farlow
Senior Research Fellow
Oxford Martin School
University of Oxford



4. Your Programme: Extra-curriculars

All Certificate Programmes include a wide array of activities outside of the classroom that are designed to enrich the learning experience here in Oxford.

These include visits to major sites, museums and galleries, cultural talks and events, and further social, sporting and general enrichment activities.





4. Your Programme: Extra-curriculars

Visits to the main sites of the University of Oxford

- Bodleian Library
- Oxford Union Debating Chamber and Library
- Botanical Garden
- The 'Dreaming Spires': St Mary's University Church, the Saxon Tower, Carfax Tower
- Other Colleges of the University, including evensong at ChristChurch Cathedral





4. Your Programme: Extra-curriculars

Visits to Oxford's Finest Museums and Galleries

- Ashmolean Museum
- Museum of the History of Science
- Natural History Museum
- Pitt Rivers Anthropological Museum
- Oxford Castle
- Modern Art Oxford





4. Your Programme: Extra-curriculars

Evening Speaker Series and Cultural Events

- Recent talks have included 'Pricing with Market Power', 'Finance and Ethics', and 'AI and the Future of Finance'
- Recent events have included a Shakespeare play in Oxford Castle and an Organ Concert





Worcester College
UNIVERSITY OF OXFORD

5. Your Programme: Excursions

Also included in every certificate programme are major trips and excursions, usually on Wednesdays and Saturdays

These are always run by the programme team in conjunction with local guides





5. Your Programme: Excursions

Blenheim Palace

Britain's Greatest Palace, birthplace of Winston Churchill and historical treasure trove





5. Your Programme: Excursions

Cambridge: City and University

The colleges and city of Oxford's great rival – also including a visit to the Fitzwilliam Museum and Galleries





6. Your Programme: Sample Timetables

Oxford Certificate Programme at Worcester College

	12 August Saturday	13 August Sunday	14 August Monday	15 August Tuesday	16 August Wednesday	17 August Thursday	18 August Friday
Breakfast	Day of Arrival	Breakfast at Worcester Dinning Hall 8:00 - 9:00					
Time		9:00 - 11:00	9:00 - 12:15 (15 min break)	9:00 - 12:15 (15 min break)	9:00 - 12:15 (15 min break)	9:00 - 11:00 (15 min break)	9:00 - 10:00 (15 min break)
Event		Welcome, Orientation & Worcester College Tour	Lecture I & II	Lecture III & IV	Lecture V & VI	Lecture VII & VIII	Lecture including Assessment
Faculty		Instructor	Instructor	Instructor	Instructor	Instructor	Instructor
Location		Nash Suite, Worcester College	Nash Suite, Worcester College	Nash Suite, Worcester College	Nash Suite, Worcester College	Nash Suite, Worcester College	Nash Suite, Worcester College
Lunch		Lunch break					
Time		14:00 - 19:00	14:00 - 15:30	14:30 - 17:00	15:00 - 17:00	13:40-1800	14:30 - 15:30
Event	Check-in Location: Worcester College main entrance/ Lodge on Walton Street, Oxford, OX1 2HB	Oxford City Tour	Visit to Ashmolean Museum	Visit to Bodleian Library	Visit to Blenheim Palace	Oxford Union	Post Assessment preparation/free time
Faculty							
Location							
Time							
Event							
Faculty		Programme Team	Programme Team	Programme Team	Programme Team	Programme Team	
Location		Meet at Worcester College Lodge	Meet at Worcester College lodge	Meet at Worcester College lodge	Meet at Worcester College Lodge	Meet at Worcester College Lodge	
Dinner		Dinner Break					
Time		17:00 - 18:00	19:30 - 20:30	19:00 - 20:00	19:00 - 20:00	Free Evening/Personal Study	1900-2000
Event		Welcome Reception	Pricing with Market Power	Town & Gown - Oxford Traditions	Student Life in Oxford		Quiz Night
Faculty	Programme Team	Programme Team	Prof Simon Cowan, Worcester College, University of Oxford	Dr. Maximilian Lau, Worcester College, University of Oxford	Lilly Hong, Worcester College, University of Oxford		Programme Team
Location	Lodge, Worcester College	Cloisters, Worcester College	Nash Suite, Worcester College	Nash Suite, Worcester College	Nash Suite, Worcester College		Nash Suite, Worcester College



6. Your Programme: Sample Timetables

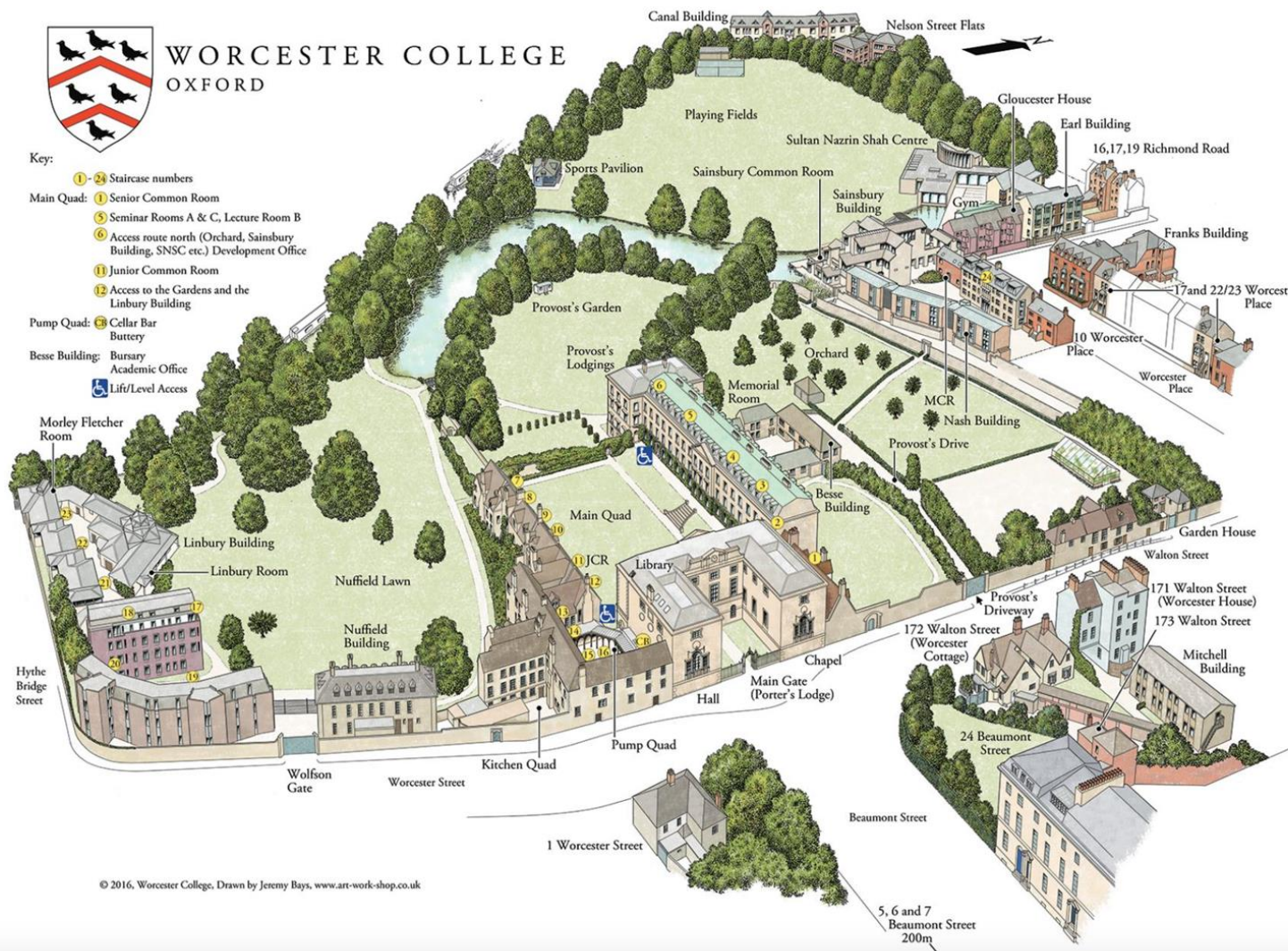


Oxford Certificate Programme at Worcester College

19 August Saturday	20 August Sunday	21 August Monday	22 August Tuesday	23 August Wednesday	24 August Thursday	25 August Friday
Breakfast at Worcester Dining Hall 8:00 - 9:00						
9:00 - 12:15 (15 min break)	9:00 - 18:00 (15 min break)	9:00 - 12:15 (15 min break)	10-1300 (Note later start) (15 min break)	9:00 - 12:15 (15 min break)	9:00 - 11:00 (15 min break)	9:00 - 10:00 (15 min break)
Lecture I & II	Excursion to Cambridge	Lecture III & IV	Lecture V & VI	Lecture VII & VIII	Lecture including Assessment	Check Out and Safe Travels!
Instructor		Instructor	Instructor	Instructor	Instructor	
Nash Suite, Worcester College		Nash Suite, Worcester College	Nash Suite, Worcester College	Nash Suite, Worcester College	Nash Suite, Worcester College	
		Lunch break				
14:00 - 15:30		14:30 - 17:00	15:00 - 17:00	13:40-1800	14:30 - 15:30	
Visit to other Oxford Colleges		Oxford Castle	Oxford Botanic Garden	Natural History Museum and Pitt Rivers Museum	Graduation and Packing Time	
Programme Team		Programme Team	Programme Team	Programme Team	Programme Team	
Nash Suite, Worcester College		Meet at Worcester College lodge	Meet at Worcester College lodge	Meet at Worcester College Lodge	Meet at Worcester College Lodge	
					Farewell Dinner	
19:00 - 20:00		19:00 - 20:00	17:30 - 19:00	19:00 - 20:00	Free Evening	
Free Evening	Free Evening	Organ Concert	Evening Talk: Edward Hadas	Free evening/personal study		
		College Organ Scholar	Research Fellow at Blackfriars: Economist, Social Scientist and Philosopher			
		Worcester Chapel	Nash Suite			



7. Your Programme: Logistics





7. Your Programme: Logistics

Accommodation

- Staying in an Oxford college is always a wonderful and unique experience. Unlike modern hotels, college rooms vary in size, shape and condition. Please note that your accommodation will be randomly allocated.
- Boys and girls will be in separated areas – some of you are in twin rooms and others in single rooms as you have booked.
- At the Oxford Certificate Programme, safety and security are extremely important to us. Porters of all colleges in Oxford supervise the entrances 24 hours a day, and they are available at all times. Colleges also operate CCTV and during the Welcome and Orientation we will outline all necessary health and safety procedures to make sure you have an enjoyable stay. A member of the programme staff is on call 24/7 to help in any emergency.





7. Your Programme: Logistics

Health, Safety and Safeguarding

- The Health and Safety as well as the safeguarding and wellbeing of all participants is exceptionally important for everyone at the College. We have a full Safeguarding Policy in place, and specific measures for all health and safety aspects of the programme.
- All participants will attend a Welcome & Orientation session on the first day of the programme. During Welcome & Orientation, all participants will be made familiar with all health and safety measures in the College, as well as the Safeguarding Policy.
- All activities and lectures during the programme are supervised by staff members. All such team members are trained in Safeguarding. Furthermore, risk assessments have been carried out for all activities featured within the programme.
- Team Members are always available to the students, early or late, whether they just need to talk to a friendly face, or whether they have a serious problem. Team members have received welfare training as well as safeguarding.





7. Your Programme: Logistics

Day of Arrival

Three Options:

- Dropped off by family/friends
- Arrival by yourself
- Meet/Greet/Transfer Service from Heathrow Airport

All students will be welcomed by the team and taken to their rooms





8. Your Programme: How to Apply

To apply, simply follow these steps:

1. Send an email to **enquiries.cpc@worc.ox.ac.uk** and indicate your interest to enrol in the Oxford Certificate Programme at Worcester College offered for University students in 2024
2. The Certificate Programmes team of Worcester College will respond with any further details we need from you
3. After your application has been fully added to the system of Worcester College, you can arrange payment, and then we will keep you fully updated on everything you need to know with a series of onboarding emails as the programme approaches



Any Questions for us?