

# REDX RESEARCH



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# OUR MISSION

Our mission is to empower students with top-tier instructors, ensuring they excel academically and stand out in college applications.



# THE SECRET TO SUCCESS.

## Research experience!

- Like Columbia and Harvard, **MOST** top universities in the US and UK **value research** undertaken by applicants.
- **Deep Research** in your area of interest is one of the best, if not the best way of showing admission officers that you are **truly interested** in what you seek to study.

**HARVARD COLLEGE**  
Admissions & Financial Aid

### About

#### What courses should I take to prepare for applying to Harvard?

There is no "one size fits all" rule about which curriculum to study during secondary school years. Students should challenge themselves by taking courses deemed appropriate by their teachers and counselors. But some students believe that "more is always better" when it comes to AP, IB or other advanced courses.

While some students prosper academically and personally by taking large numbers of such courses, others benefit from a more balanced approach that allows them additional time for extracurricular and personal development. Even the best students can be negatively affected by taking too many courses at once, and might benefit instead from writing, reading or research projects on subjects of great interest to them.

According to their admissions page, Harvard does not encourage students to take an excessive number of courses at school. Instead, it advocates for a more balanced approach, such as engagement in research programs. Students are encouraged to submit their research findings as a component of their application.

**COLUMBIA ENGINEERING**  
The Fu Foundation School of Engineering and Applied Science

### Resume/CV

This document should outline clearly and briefly the following:

- Employment held (include title of jobs and start/end dates)
- **Research activities**
- Academic honors, including fellowships you have been awarded
- Volunteer or community service
- **Extracurricular activities**
- Honorary societies
- **Publications**

A few topics that you may want to address in your Personal Statement include:

- Describe how your background has prepared you to pursue an advanced degree in the field of engineering or applied science at Columbia University.
- Describe the reasons you are interested in this program and discuss any relevant past experience.
- If you have relevant work or research experience, please indicate how it helped you decide on your career path.
- What are your post-graduation plans or career goals?
- What do you hope to gain from this program?
- What about this program excites you?
- If there are any special circumstances that need to be brought to the attention of the Admission Committee, please include that information.

Johns Hopkins places a strong emphasis on letters of recommendation. With RedX, students have the opportunity to receive a letter of recommendation from the best professors in their respective fields.

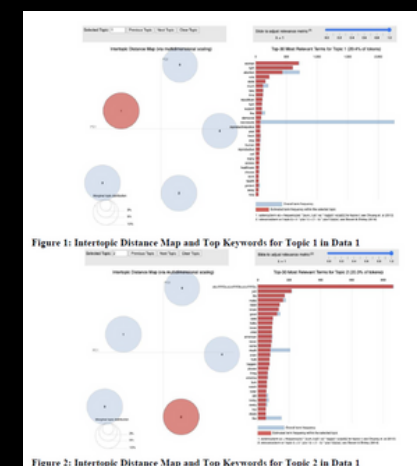
**GETTING ACCEPTED**

**JOHNS HOPKINS UNIVERSITY**

### What do you look for in letters?

First we consider the source of the letter. A letter from your cousin who happens to teach at a two-year college is weighed significantly less than a letter from a researcher at a top computer science school! Next, we look for evidence of research potential. In particular, evidence of outstanding performance in past projects is of high importance. Somewhat less important is evidence of outstanding ability in the classroom. A good letter writer should know you well and be able to rank you very favorably in comparison with your peers.







# Dubai 2026 Summer Example Schedule

Day	Professor	Mentor	Content
Day 1	4 hrs	1 hr	What makes behavioral economics unique? / The role of rationality / Data constraints in behavioral economics Quantitative Economics and statistics / Importance of datasets in research
Day 2	4 hrs	1 hr	Correlation and causation, populations and samples, hypothesis testing / Intrinsic and extrinsic motivations and incentives / Charitable donations, crowding out, and policy implications
Day 3	4 hrs	1 hr	Trust, reciprocity, and inequity aversion / Herding and social learning / Social norms
Day 4	4 hrs	1 hr	Availability heuristics, representative heuristics, and anchoring / Information and choice overload / Mistakes and biases when using heuristics / The status quo bias and the confirmation bias
Day 5	4 hrs	1 hr	The present bias and time inconsistency when making inter-temporal choices / Benefits and costs / Immediate and delayed rewards, pre-commitment strategies and self-control
Day 6	4 hrs	1 hr	Overview of Behavioral Economics applications in marketing / Consumer / decision-making processes / Heuristics and biases in consumer choices
Day 7	4 hrs	1 hr	Application of Behavioral Economics Theory in the real world / Understanding Behavioral Economics programs / policy objectives and causal relationships
Day 8		3 hrs	Research class
Day 9		3 hrs	Research class
Day 10		3 hrs	Research class
Day 17	4 hrs		Group Presentation; Research paper review with professor

# Student Feedback from around the Globe



"I'm very satisfied with the networking I've done within the program. I've met hardworking and passionate individuals who were more than willing to help me enhance my knowledge. This experience has taught me a lot about biostatistics, and through the challenges of striving to be a passionate and motivated student."



Saratoga High School,  
10th Grade

**Accepted to Stanford University**



"I must admit that RedX played a huge role in strengthening my college application, my interviewers were clearly impressed with who I had worked with, and what research I had done."



Cherry Sung

**Bsc International Relations at the LSE (London School of Economics and Political Science)**



"The LSE has always been my dream school. RedX played a considerable role in my success."



Harry Tong



**Accepted to Massachusetts Institute of Technology**

"There are so many research programs out there, but this one is unmatched. It felt absolutely amazing to learn from an Oxford Professor from the comfort of my home."



Kevin Crawford



Learn from the best  
with RedX.

# REDX RESEARCH

**Flagship Courses  
for Summer 2026  
in Dubai**





**Professor Donald Robertson;  
Department of Economics at  
the University of Cambridge**

Donald Robertson is Professor of Econometrics at the University of Cambridge and a Fellow of Pembroke College, specialising in applied econometrics, business cycles, and macroeconomic analysis.

# Applied Microeconomics and Finance

## Why choose this course?

Applied microeconomics and finance form the foundation of strategic decision-making in business, policy, and investment. From determining optimal pricing strategies to evaluating investment opportunities, these disciplines enable organizations to allocate resources efficiently, manage risk effectively, and maximize value creation. This course delves into the real-world application of microeconomic principles and financial tools: supply and demand analysis, market structures, valuation methods, and capital allocation frameworks.

Students will probe into how these concepts are employed to solve practical problems, from designing incentive systems to assessing project viability, and develop the analytical toolkit needed to make data-driven economic decisions.

## What you will learn:

The curriculum will cover fundamental concepts of consumer and producer behaviour, market equilibrium and efficiency, game theory and strategic interaction, time value of money and discounted cash flow analysis, portfolio theory and risk management, capital budgeting and investment appraisal techniques, pricing strategies and market design, and real-world case studies examining how firms, investors, and policymakers apply these frameworks to optimize resource allocation and evaluate economic trade-offs.

# economics



## Focus

- Supply-demand analysis
- Game theory modeling
- Cost-benefit analysis
- Financial modeling
- Risk-return assessment
- Pricing strategies
- Investment appraisal
- Financial statement analysis
- Incentive design
- Case study application



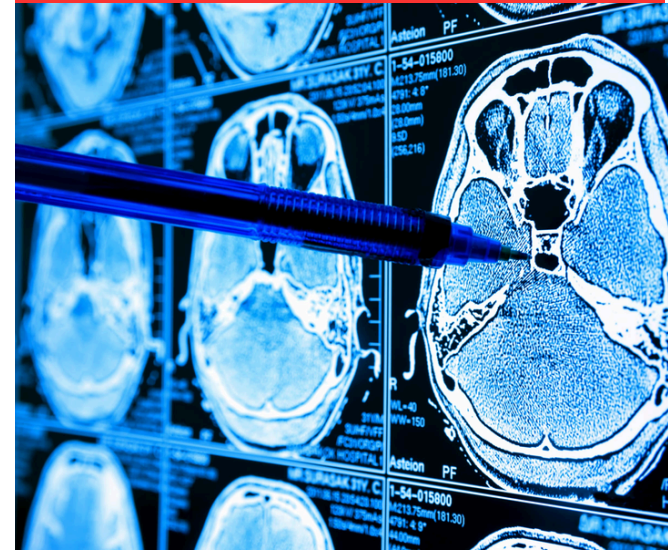


# Digital Pathology: Using AI to Detect Cancer

## Why choose this course?

Digital pathology and artificial intelligence are transforming cancer diagnosis and patient care. From analyzing tissue samples under the microscope to detecting subtle cellular changes invisible to the human eye, these technologies enable faster diagnosis, enhanced accuracy, and the ability to identify disease patterns at unprecedented scale. This course delves into the computational methods that power modern pathology: computer vision algorithms, image analysis techniques, and machine learning models trained on thousands of patient samples.

Students will probe into how AI systems analyze microscopic tissue images, distinguish cancerous from healthy cells, and support pathologists in making life-saving diagnoses.



## What you will learn:

The curriculum will cover fundamental concepts of cellular biology and cancer pathology, the principles of microscopy and digital imaging, computer vision techniques for medical image analysis, convolutional neural networks and their application to tissue classification, methods for training and validating diagnostic AI models, performance metrics for assessing diagnostic accuracy and clinical utility, ethical considerations in deploying AI for patient care, and exploration of real-world case studies where computational pathology has improved cancer detection and treatment outcomes.

## Focus

- Microscopic image analysis
- Cellular abnormality detection
- Neural network training
- Image pre-processing techniques
- Model performance evaluation
- Diagnostic accuracy metrics
- Clinical dataset handling
- Pathology case interpretation
- Ethical AI deployment

**Professor Jens Rittscher;  
Department of Medicine at  
the University of Oxford**

Holding Oxford's first joint appointment between Engineering and the Nuffield Department of Medicine, Professor Rittscher builds AI foundation models that predict chemotherapy response and extract molecular features from tissue images invisible to the human eye. Rittscher teaches machines to see what pathologists can't at the Ludwig Institute and Target Discovery Institute.

# Optimization and Algorithms: The Mathematics Behind AI

## Why choose this course?

Optimization algorithms form the backbone of modern artificial intelligence and data science. From training neural networks to finding the best solutions in complex systems, these mathematical techniques enable machines to learn from data, make predictions, and solve problems at scale. This course delves into the computational methods that power machine learning: gradient descent, convex optimization, matrix factorization, and efficient numerical algorithms. Students will probe into how optimization problems are formulated, how algorithms converge to solutions, and how computational efficiency is achieved in large-scale data analysis.

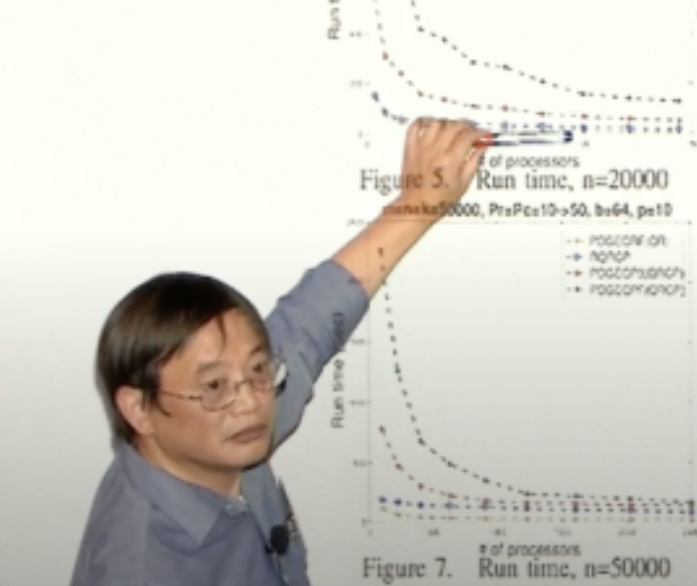
## What you will learn:

The curriculum will cover fundamental concepts of optimization theory, gradient-based methods for training machine learning models, numerical linear algebra techniques for efficient computation, convex optimization and its applications in AI, algorithm design principles for scalability, matrix decomposition methods for dimensionality reduction, convergence analysis of iterative algorithms, and hands-on implementation of optimization algorithms with performance evaluation on real-world datasets.



## Focus

- Algorithm complexity analysis
- Matrix computation techniques
- Convex optimization methods
- Convergence analysis
- Computational efficiency
- Large-scale data processing
- Performance benchmarking
- Practical algorithm design



**Professor Ming Gu; Department of Mathematics at the University of California, Berkeley**

**Ming Gu is a UC Berkeley mathematics professor who creates absurdly fast algorithms for massive-scale numerical problems. The kind that make matrix computations 100x faster and let deep learning models actually run.**





**Lecturer Peter Bergamin;  
Department of History at the  
University of Oxford**

**Dr. Peter Bergamin is a Lecturer at Oxford University, where he teaches students to question power itself. His research explores how political movements justify their right to rule, from revolutionary ideologies to modern democratic states.**

# Justifying Authority

## Why choose this course?

Political authority shapes every aspect of modern life, from laws we follow to taxes we pay, yet its legitimacy is far from self-evident. Why should citizens obey the state? What makes a government's power morally justified? From ancient debates about tyranny and democracy to contemporary questions about state surveillance and civil disobedience, these fundamental questions underpin all political systems. This course delves into the major theories of political legitimacy: social contract theory, consent-based justifications, democratic authority, and anarchist challenges to state power. Students will probe into how philosophers from Hobbes to Rawls have grappled with the puzzle of political obligation and develop the critical tools to evaluate competing claims about the foundations of governmental authority.

## What you will learn:

The curriculum will cover classical social contract theories from Hobbes, Locke, and Rousseau, contemporary debates about democratic legitimacy and political obligation, anarchist critiques challenging the justification of state authority, the relationship between consent and coercion in political systems, theories of justice and their implications for legitimate governance, the limits of state power and individual rights, civil disobedience and when breaking the law might be justified, and comparative analysis of different political systems through the lens of legitimacy theory.

# Political



## Focus

- Philosophical argumentation
- Critical text analysis
- Political theory frameworks
- Conceptual distinctions
- Evaluating normative claims
- Historical contextualization
- Comparative analysis
- Legal reasoning



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**One Program,  
Infinite Possibilities.**

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