Toby Lam

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Education

2021 – 2025 **MMath**, *Balliol College, University of Oxford.*
Third year courses: Geometry of Surfaces, Topology and Groups, Algebraic Curves, Nonlinear dynamics, Classical Mechanics, Electromagnetism
Second year courses: Linear Algebra, Metric Spaces and Complex Analysis, Differential Equations, Rings and Modules, Integration, Topology, Fluids and Waves, Quantum Theory

Research Experiences

2023 – Ongoing **Extended Essay**, *University of Oxford.*
The Isoperimetric Inequality (& Curve Shortening Flow)
Supervised by Prof. Jason D. Lotay

2023 **Summer Project**, *University of Oxford.*
Applications of Lie Groups to Differential Equations
Supervised by Prof. Jason D. Lotay
Funded by Dr. Prosser's Trust, Balliol College (£2500)

Awards

2023 **Robin Wilson Prize**, *Balliol College, University of Oxford.*
For excellent performance by a first-year student in Pure Mathematics (£150)

2023 **Prelims Prize**, *Balliol College, University of Oxford.*
For good performance in First Public Examination (£50)

Academic Experiences

2024 – Ongoing **Magazine Editor**, *The Oxford Invariants.*
Would edit the student magazine for mathematics at Oxford

2024 – Ongoing **Co-organiser**, *Oxford Junior MathPhys Journal Club.*
Organising weekly talks in mathematics & theoretical physics by undergraduate and graduate students

Talks

2024 Mar **Tomorrow's Mathematicians Today 2024**, *The Institute of Mathematics and its Applications.*
Inverse function theorem and symmetries of differential equations

2024 Feb **Members Talk**, *The Oxford Invariants.*
The isoperimetric inequality

2024 Feb **Oxford Junior MathPhys Journal Club**, *University of Oxford.*
Symmetries of differential equations

2023 Mar **Tomorrow's Mathematicians Today 2023**, *The Institute of Mathematics and its Applications.*
Showing preservation of properties under multiplication via difference of squares

2023 Feb	**Members Talk**, *The Oxford Invariants*. *Structures closed under intersections or unions*
2022 Oct	**Second Year Seminar**, *Balliol College, University of Oxford*. *Showing preservation of properties under multiplication via difference of squares*

Teaching Experiences & Public Engagement

2020 – Ongoing **Blog creator**, *www.tobylam.xyz*.
- Written >15 blog posts on exposing undergraduate mathematics
- Updated a complex function plotter at www.tobylam.xyz/plotter which supports one time parameter for animations
- Written resources and guides on learning maths beyond the syllabus specifically for secondary school students from Hong Kong

2023 **Mentor for Problem Solving Matters**, *University of Oxford*.
- Mentor for Problem Solving Matters, a summer course jointly run by University of Oxford for prospective mathematics applicants from state-funded schools
- Assisted up to 10 students in classes and marked 3 problem sheets

Volunteer Experiences

2021 - 2023 **Committee Member**, *Access Abroad Hong Kong*.

Access Abroad Hong Kong aims to widen access for Oxbridge for less-privileged local students by providing one-to-one mentorship programmes.
- 2023 Summer: Designed and taught a one-lecture course on calculus in kinematics and waves for 20 prospective Oxbridge applicants; Created and marked problem sheets
- 2022 Summer: Designed and taught a one-lecture course on statements and proofs for 18 prospective Oxbridge applicants; Created and marked problem sheets; Held 5 tutorials to give feedback
- Conducted >15 mock interviews
- Mentored 3 Oxford mathematics applicants
- Hosted a talk on STEM industry career pathways for undergraduates
- Gave talks to prospective mathematics applicants on course structure and admission process

2022 – 2023 **Mentor**, *Hong Kong Academy for Gifted Education*.

Mentor for 4 13-15 years old students from underprivellaged backgrounds
- Had 1-hour meetings every month over half a year
- Encouraged them to find their passion / realise their potential