James Graham

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Education

University of Oxford, Oxford, UK 2017
MSc Mathematical & Theoretical Physics, Distinction

Northwestern University, Evanston, IL 2016
BS Applied Mathematics, summa cum laude

Experience

Instructor, Mathnasium of Mount Vernon, Alexandria, VA Apr. 2019 – Present
- Taught students topics from elementary through high school in a small group setting;
- Managed individualized workflows of several students simultaneously;
- Enthused students in mathematics by relating my experiences to theirs

Non-Perturbative Methods in Quantum Field Theory, University of Oxford Mar.–Apr. 2017
- Simulated a U(1) gauge theory with C++;
- Implemented the Metropolis algorithm;
- Extracted physical quantities from correlation functions with MATLAB and Excel.

Architectural Engineering and Design, Northwestern University Sept.–Dec. 2014
- Synthesized a design concept for a model site to satisfy client's needs;
- Constructed detailed scale model of house and environs;
- Pitched my solution to a panel of architects and engineers.

Research Assistant, Engineering Science & Applied Mathematics, Northwestern University Mar. 2014–Jan. 2015
- Simulated Hogdkin-Huxley neurons using the BRIAN package in Python;
- Investigated synchronization of neural firing in presence of periodic stimulus.
- Karamchandani, A. J., **Graham, J. N.**, & Riecke, H. E. (2018). Pulse-coupled mixed-mode oscillators: Cluster states and extreme noise sensitivity. *Chaos*, *28*(4), [043115]. https://doi.org/10.1063/1.5021180

Research Assistant, Engineering Science & Applied Mathematics, Northwestern University Apr.–Sept. 2013
- Integrated memory cortex model into simulation of signal decorrelation with MATLAB;
- Investigated synapse survival through stimulation by memories

Leadership

Lead Instructor, Mathnasium of Mount Vernon, Alexandria, VA Feb.—Nov. 2018
- Assemble and manage curriculum for more than 100 students;
- Prepare progress reports to share students' learning with parents;
- Manage instruction and administrative tasks in a team of 9 instructors;
- Coordinate training for new instructors.

Social Secretary, Pembroke College Middle Common Room, Oxford, UK Nov. 2016–Jun. 2017
- Delegated and shared tasks in a group of three;
- Organized three formal halls and one black tie event per term.

Teaching Assistant, Department of Mathematics, Northwestern University Sept. 2015–Mar. 2016
- Led a weekly discussion section on calculus for one hour;
- Answered students' questions about problem sets;
- Invigilated and marked two department-wide quizzes and up to three exams per term.

Awards

Outstanding Graduate Prize in Applied Mathematics 2016
Roger Boye Oxbridge Bursary to support study at Oxford 2016
Summer Research Opportunities Award to support summer research 2014
Merck Index Award for outstanding performance in organic chemistry 2013
Woody Herman Jazz Award for four years of service to my high school's jazz band 2012

Skills

C++ • Python • MATLAB • Mathematica • LaTeX • HTML • CSS
English • German • Russian
Communication • Time Management • Self-Motivation • Teamwork