Department of Applied Mathematics
University of Waterloo
What is applied mathematics?

- Use of mathematics to solve problems in basic (physics, biology,…) and applied sciences (engineering, medicine, …)
- Primary tools: mechanistic models (ODEs, PDEs, stochastics,…)
- Active collaborations with researchers outside mathematics
- Development of novel mathematics is often required to solve problems
Research Areas

- Control and dynamical systems
- Fluids
- Mathematical Medicine and Biology
- Mathematical Physics
- Scientific computation
Control and Dynamical Systems

Faculty members: 6
Control systems, Dynamical Systems, Signals & Images, Differential Equations

Control systems

Stability

Image Processing

Neural networks
Environmental and Geophysical Fluid Dynamics

Faculty members: 4

Oceanic/Lake circulation

Navier-Stokes equation

Global carbon cycle

Waves in porous media
Faculty members: 5

Modelling of tumor growth

Brain-Biomechanics

Dynamic response to DNA damage
Mathematical Physics

Faculty members: 5

Quantum information/Quantum computing
Cosmology
Carbon Nanotubes
Computational Mathematics/Scientific Computation

Faculty members: 3

- Parallel computing and GPU computing
- Numerical methods for PDE systems
- Numerical linear algebra methods
- Parallel computing and GPU computing

Applications in fluid dynamics, musical acoustics, geophysics, Big Data, ...
Research Areas

- Control and dynamical systems
- Fluids
- Mathematical Medicine and Biology
- Mathematical Physics
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Graduate Program in Applied Mathematics at UW

- 87 graduate students (50 PhD, 37 M)
- Largest Applied Math program in Canada
- Intensive collaborations with researchers outside mathematics
- Graduates successful in obtaining academic and industrial positions
Graduate Work in Applied Math

- Graduate students receive full support (tuition and living expenses)
- Full-time Master’s students receive financial support of at least $23,000/yr
- Typically 3 TAs/year
- Additional opportunities for income/teaching experience
- Some projects are with external agencies
Master’s and PhD programs

- 2-year thesis-based Master’s program (with 4 grad courses and a thesis)
- 4-year PhD program (4 additional courses)
- opportunity for direct transfer from Master’s to PhD after 1 year

- application deadline: January 15
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Questions?