Daniel Dema

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Education

York University Sep. 2024 – Present
Master of Arts in Pure Mathematics

University of Toronto Sep. 2019 – Apr. 2024
Honours Bachelor of Science in Mathematics

Relevant Coursework: Real Analysis, Complex Analysis, Abstract Algebra, Topology, Measure Theory, Set Theory

Work Experience

Teaching Assistant Sep. 2024 – Present
York University

- MATH1507 - Mathematics II for the Biological and Health Sciences ×1
- MATH1506 - Mathematics I for the Biological and Health Sciences ×2
- MATH1300 - Differential Calculus with Applications ×1
- MATH1021 - Linear Algebra I ×1

Teaching Assistant Sep. 2021 – Present
University of Toronto

- MAT337H5 - Introduction to Real Analysis ×2
- MAT240H5 - Algebra I ×3
- MAT224H5 - Linear Algebra II ×3
- MAT137H5 - Differential Calculus for Mathematical Sciences ×1
- MAT137Y5 - Calculus ×1
- MAT136H5 - Integral Calculus ×1
- MAT135H5 - Differential Calculus ×1
- MAT102H5 - Introduction to Mathematical Proofs ×4
- MATA22H3 - Linear Algebra I for Mathematical Sciences ×1

Instructional Assistant Aug. 2024
University of Toronto

- Led workshop sessions on foundational pre-calculus skills to prepare 30+ incoming undergraduate students for university level math courses
- Implemented newly developed educational methodology in the classroom and used Microsoft Excel to manage student grade data for ongoing research in mathematics education at the Institute for the Study of University Pedagogy

Talks

Course Presentation on Forcing Axioms (University of Toronto, 2024): A proof that under MA, every locally finite, outer regular, Radon measure space is σ-finite; presented in a graduate course on forcing.
An Introduction to Descriptive Set Theory (University of Toronto, 2023): A crash course on Polish spaces, followed by an introduction to the notions of measure and category, with a discussion of how classical theorems on Polish spaces can be used to prove the Erdős-Sierpiński duality between measure and category.
Basic Embedding Results in Descriptive Set Theory (University of Toronto, 2023): A brief introduction to Polish spaces, followed by a discussion of classical embedding results involving the the Hilbert Cube, the Cantor space, and the Baire space.

Technical Skills

Languages: Python, SQL, HTML/CSS
Libraries: scikit-learn, pandas, NumPy, Matplotlib
Tools: Git, Jupyter, PostgreSQL, VS Code, MS Excel, LaTeX