



Department of Mathematics and Statistics

# NEW COURSE OFFERING

## Winter 2023

# Real Analysis I

## MATH-2405

This course lays the theoretical foundation of single-variable calculus by providing a careful introduction to several fundamental concepts of analysis on the real line, and it provides a gateway to more advanced studies in analysis, topology and set theory. Topics covered include: functions acting on sets; countable and uncountable sets; suprema and infima; properties of the real numbers including completeness, the Archimedean property and density of the rational numbers in the real numbers; sequence convergence, monotone sequences, subsequences, the Bolzano-Weierstrass theorem and Cauchy sequences; limits of functions; continuous functions including proofs of the extreme and intermediate value theorems.

**Professor:** Dr. Iain Smythe

**Times:** MWF 9:30-10:20, Winter 2023

**Prerequisite:** Minimum grade of C in both MATH-1104 and MATH-1401 required.

This course is recommended for all mathematics majors and can be used towards a major, teachable major, minor or teachable minor in mathematics. It is recommended that MATH-2405 be taken prior to MATH-3101 or at the same time as MATH-3101. Contact [mathstats@uwinnipeg.ca](mailto:mathstats@uwinnipeg.ca) for more information.



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