

PMATH 950, FALL 2018: COMPLETELY BOUNDED MAPS

COURSE DESCRIPTION

This course will cover the principal results, motivations, and ideas in the theories of completely bounded and completely positive maps, dilation theory, operator spaces and operator systems. We will assume that students have a basic background in functional analysis along with an introduction to C^* -algebras. Grades will be based on homework and a final project.

Topics to be covered include:

- positive and completely positive maps,
- Stinespring's dilation theorem, Arveson's extension theorem, and their completely bounded generalizations,
- von Neumann's inequality and its' generalizations,
- Kadison's and Halmos' similarity problems,
- injective envelopes,
- abstract characterizations of operator systems, operator spaces, and operator algebras,
- some special operator spaces,
- Pisier's similarity and factorization degree