

MATH 146
Current Problems in Applied Mathematics:
Dynamical Systems and Quantum Information

Lecture Plan

Week 1	Introduction to ergodic theory and quantum mechanics
Week 2	Measure-preserving transformations; Koopman and transfer operators
Week 3	Spectral theory for unitary evolution groups
Week 4	Algebraic formulation of quantum mechanics; von Neumann algebras
Week 5	Quantum channels
Week 6	Embedding classical dynamical systems into quantum systems
Week 7	Discretization; quantum circuits
Week 8	Simulation of classical dynamical systems on quantum computers
Week 9	Student presentations
