Actsc 631 Financial Mathematics 3

Syllabus

- Risk measures.

- Binomial and lattice models for option pricing.

- Black-Scholes option pricing: assumptions, greeks, risk neutral and real world measures.

- Term structure models: forward measures, single factor models including Vasicek, Cox-Ingersoll Ross and Hull-White; limitations of one-factor models. Insurance applications.

- Introduction to credit risk: types of models; types of credit derivatives.

Notes: Together with Actsc 624, this course covers CT8. It also substantially covers course MFE of the Society of Actuaries.

Textbook: The text would be at the level of Options, Futures and Other Derivatives, by Hull, or Derivatives Markets, by McDonald, supplemented by course notes for more depth in the mathematics.

Contact Hours: 36 lectures, 10 tutorials.

Assessment: 65% final exam (unseen); 15% midterm exam (unseen); 10% project, 10% assignments.