

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.