

# UTS:SHORT COURSES

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## Advanced Credit Risk Modelling

The Global Financial Crisis has highlighted the need of sophisticated credit risk management as well as the danger of blindly applying complex models without a thorough understanding of their underlying assumptions and limitations. This workshop addresses these issues, providing insight into what can and can't be done using quantitative models for credit risk – and how to do what can be done.

This workshop provides a tutorial survey of the state-of-the-art mathematical models for credit risk, resulting in an understanding of their relative merits, the issues involved in their implementation and their use in the pricing and risk management of credit risk and credit derivatives.

### Will Benefit

This course is particularly useful for:

- People seeking an understanding of credit risk models which goes beyond the proverbial “Black Box”
- Risk managers, particularly model validators
- Credit quants
- Advanced credit derivatives traders
- Researchers
- Financial engineers.

### Entry Requirements

Participants should be familiar with the basics of statistics and probability, as well as differential and integral calculus.

### Program - Day One

#### > Overview

- Credit risk modelling issues
- Overview of credit risk modelling approaches: main features, advantages, disadvantages
- Credit derivatives overview

#### > Modelling default risk using asset-based approaches

Merton: the basic structural model

- Assumptions, limitations and characteristic model features
- The term structure of credit spreads and probabilities of default
- Extensions of Merton model ‘freeing up’ the default boundary
- Incorporating interest rate uncertainty
- Practical exercise: Fitting a simple Merton model to market data

#### > Recovery rate modelling

- Implications of alternative ways to model recovery
- Expected loss versus loss given default
- Empirical features of recovery rates
- Correlation between default rates and recovery

#### > Spread-based models of default risk

- Credit spread curves and implied default probabilities
- The basic reduced-form model and its extensions
- Transition matrix (credit ratings) models as reduced form models
- Relating spread-based and asset-based models
- Practice exercise: Fitting a credit spread curve.

### Program - Day Two

#### > Modelling counterparty credit risk

- Vulnerable swaps
- Counterparty credit risk in credit default swaps

#### > Modelling default correlation for portfolio credit risk measurement

- The impact of default correlation on loss probabilities
- The need for reduction of complexity
- Default correlation in the asset-based approach
- The approach in JP Morgan's Credit Metrics
- The copula-based approach to modelling default dependence
- Credit contagion and credit spread co-movements

#### > Structured credit products in the financial crisis: A forensic view

- The products: CDOs, CPDOs and even stranger beasts
- The modelling challenges
- What went wrong?

### About the Presenter - Professor Erik Schlögl

Professor Erik Schlögl is the Director of the Quantitative Finance Research Centre at the University of Technology, Sydney (UTS). Erik received his Ph.D. in Economics from the University of Bonn, Germany, in 1997 and has gained broad-based experience in computational financial engineering. He has consulted for financial institutions, software developers and public sector organisations in Europe, the US and Australia, including all four major Australian banks. His publications list includes articles in Finance and Stochastics, Applied Mathematical Finance, Risk, Journal of Financial Engineering and the International Journal of Theoretical and Applied Finance. His current research interests focus on credit risk modelling as well as integrating interest rate uncertainty with other sources of market risk.

Erik has held positions at the University of New South Wales and the University of Bonn, Germany. He has also conducted a variety of professional development seminars at UTS, at the conferences organised by Risk, and in-house at major financial institutions.

### Course Details

<b>2011 Date</b> Run on Demand
<b>Duration</b> 2 days (9am-5pm)
<b>Price</b> \$2,100 (GST-free)
<b>Discounts</b> 3+ enrolments UTS Alumni
<b>Presenters</b> Professor Erik Schlögl
<b>Location</b> City/Haymarket Campus
<b>Max. Enrolments</b> 25
<b>Entry Requirements</b> Participants should be familiar with the basics of statistics and probability, as well as differential and integral calculus.
<b>Further Information</b> Tel: +61 (02) 9514 3504  Email: executive.development@uts.edu.au