



*The University of Western Ontario*

Faculty of Science

Department of Applied Mathematics

# APPLIED MATHEMATICS COLLOQUIUM

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Date: Wednesday, April 16, 2008

Time: 3:30 pm

Location: Middlesex College Room 204

## **Structured Products, Market Forces and Mathematical Innovation**

**Dr. Greg Frank**

VP & Director, Global Business Service Analytics  
TD Bank Financial Group

### **Abstract:**

Investors are preoccupied with maximizing their return while minimizing their risk. Structured products are financial contracts that provide customized yield and risk characteristics, built by combining simpler derivative contracts to provide the desired profile. In practice products rapidly evolve as investors and competitors force innovation, and pricing and risk management must move quickly from familiar closed-form analytical solutions to more complex approaches. While a random sampling of news headlines indicates the process is not without its risks, this environment provides tremendous opportunities to apply both practical and innovative mathematical techniques to real-world problems.

This talk will follow the life cycle of a typical structured product from initial identification of the investor need through distribution of vanilla and exotic variants. We'll develop models in terms of equity products, but the process is equally applicable to other asset classes like energy, credit or interest rates. We will focus on how the analytical and modeling challenges emerge naturally from market pressures. Finally we will look at some of the practical challenges presented when valuation depends critically on unobservable parameters and when prudent risk management presents enormous computational burdens.