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## ***Review of Financial Risk Management of Insurance Enterprises Course***

**by Scott Martin**

**A**re you a “traditional” actuary who says, “Here are my numbers, now go away and leave me alone?” Are you uncomfortable meeting with the investment side of the office, due to a knowledge level concern? Do you wish all the current investment actuarial exams were available when you were writing? Do you read the investment details in this newsletter, among others, feel it all sounds understandable and sensible, but wonder about putting it to practice? Are you comfortable with your investment knowledge level, but would like a nice overview?

explained—from forwards, futures, swaps to options—and their uses for insurance are illustrated.

The basics from above are then applied to asset-liability management and valuation. The different ways to look at and calculate duration and convexity are illustrated. Static asset-liability management techniques, such as segmentation and cash flow matching, are discussed. Dynamic strategies are distinguished between value-driven and return-driven, with variations from passive immunization techniques to more active target strategies. Various techniques to value

developments, current theoretical and application papers, and illustrating where to find relevant information on the Internet and elsewhere. Each week, you are provided with the slides of the on-campus presentation, along with various readings. The readings are separated into required, optional, and advanced to provide benefit to varying levels of students. There are assignments and exams. Off-campus students have much flexibility in timing and the pace of working through the material. It is clearly to your benefit to keep up with the discussion, but you can read the minimum or explore all the advanced areas as desired. There are private areas on the Internet to discuss problems with other students and the professor, along with chat rooms and possibly pre-arranged times for instant response.

The course brings together university students and practicing actuaries with varying levels of experience. Through the material, the course provides instant benefit to everybody, and helps graduates bring actuarial science to the next level, ready to succeed in the next millennium.

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*Editor’s Note: In a fast-moving environment, courses such as Professor D’Arcy’s are going to become an increasingly important aid to our professional education and development. As the Society of Actuaries looks at alternative educational delivery methods, Professor D’Arcy’s approach looks to have tremendous potential.*

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***“The course is excellent in terms of keeping up-to-date with the most recent developments, current theoretical and application papers, and illustrating where to find relevant information on the Internet and elsewhere.”***

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If you answered “yes” to any or all of the above, the Financial Risk Management of Insurance Enterprises course would be well suited for you. It is a very useful four-month university course, offered over the Internet, by Stephen D’Arcy, professor of finance at the University of Illinois in Champaign, to off-campus students, covering a broad range of financial management material.

The course starts with an overview of financial risk management, discussing its benefits and the historic reasons why it has become more necessary and why an actuary should be involved. It studies various asset-pricing models, like the Capital Asset Pricing Model and the Option Pricing Model, and discusses all the risks facing an insurance enterprise and how to measure them. The course covers specific asset pricing, along with interest rate term structures and theories. All the derivative instruments are

portfolios with embedded options are discussed, from the binomial method, to the Monte-Carlo method, working through several examples valuing all forms of derivatives, including collateralized mortgage obligations.

The last third of the course applies all that is learned above. Pension fund examples, risk-based-capital illustrations, and specific technical applications to both property and liability and life insurance companies are modeled. The Dynamic Financial Analysis process is analyzed in detail, including both stochastic and deterministic techniques. Modeling catastrophic risk is discussed and recent development in securitizing catastrophic risk and sample catastrophic bonds are discussed, such as Property Claim Service options on the Chicago Board of Trade.

The course is excellent in terms of keeping up-to-date with the most recent