

22S:273 Advanced Topics in Actuarial Science - Quantitative Risk Management for Insurance

Instructor: Dr. Qihe Tang

- Office: 360 SH; E-mail: qihe-tang@uiowa.edu; Phone: (319) 335-0730
- Course Schedule: 9:30 A – 10:20 A, Monday, Wednesday, and Friday, 131 SH
- Office Hours: 10:30 A – 11:30 A, Monday, Wednesday, and Friday, or by appointment
- ICON web site: <http://icon.uiowa.edu>
- DEO: Professor Luke Tierney; 241 SH; E-mail: luke-tierney@uiowa.edu; Phone: (319) 335-0712

Course Description

During the history of finance, risk management has been described as one of the most important innovations of the twentieth century, or as the third major revolution following the Markowitz portfolio theory and the Black-Scholes-Merton option pricing theory. In recent decades, we have witnessed explosive development of the field of financial risk management. The ongoing global financial crisis that erupted in 2008 has intensified the need of risk management among financial institutions and insurance companies.

This course is designed for graduate students with good knowledge of probability and statistics to seek an entrance to the area of quantitative risk management. It will stress the fundamentals and explore topics at a somewhat technical level.

The course covers most of the first seven chapters of McNeil-Frey-Embrechts (2005), which include:

- Basic Concepts in Risk Management
- Multivariate Models
- Financial Time Series
- Copulas and Dependence
- Aggregate Risk
- Extreme Value Theory

An important feature of this course is that, while studying the intended topics and some selected papers, we shall initiate and focus on interesting research problems, either theoretical or applied, in the interdisciplinary area of statistics, insurance, and finance.

The course is particularly suitable for those who desire to pursue research on risk management in insurance.

Main References

- McNeil, A. J.; Frey, R.; Embrechts, P. Quantitative Risk Management. Concepts, Techniques and Tools. Princeton University Press, Princeton, NJ, 2005.
- A list of papers and book chapters selected from the recent literature of insurance and finance.

Evaluation System

- There will be two homework assignments, counting for 50%.
- At the end of October, a list of papers selected from the recent literature of insurance and finance will be released. Each student will be asked to pick up one from the list, to study it and make a twenty-five-minute presentation on it. This final project counts for 40%.
- Class attendance and engagement in discussions are required and count for the other 10%.
- Each student has the option to choose an A/B/C/D grade or an S/U grade.

The College of Liberal Arts and Sciences Policies and Procedures¹

Administrative Home

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall or see the CLAS Academic Handbook.

[www.clas.uiowa.edu/students/academic_handbook/index.shtml]

¹The CLAS policy statements have been summarized from the web pages of the College of Liberal Arts and Sciences.

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their standard University of Iowa e-mail address (@uiowa.edu). Students should check their account frequently. (Operations Manual, III.II.15. 2. k.11.)

Academic Fraud

Plagiarism and any other activities when students present work that is not their own are academic fraud and are considered by the College to be a very serious matter. Academic fraud is reported by the instructor to the departmental DEO who enforces the departmental consequences. The Associate Dean for Undergraduate Programs and Curriculum is also informed. The Associate Dean enforces collegiate consequences which may include suspension or expulsion. See the CLAS Academic Handbook.

Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit the instructor, then the course supervisor and the departmental DEO. Complaints must be made within six months of the incident. See the CLAS Academic Handbook.

Accommodations for Disabilities

A student seeking academic accommodations should register with Student Disability Services and meet privately with the course instructor to make particular arrangements. For more information, visit this site.

[www.uiowa.edu/~sds/]

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment at www.uiowa.edu/~eod/policies/sexual-harassment-guide/index.html for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, the class members should seek shelter in the innermost part of the building, if possible at the lowest level, staying clear of windows and free-standing expanses. The class will continue if possible when the event is over. (Operations Manual, IV. 16.14. Scroll down to sections e and i for severe weather information.)