The topics course will give an introduction to computational techniques in the field of quantitative risk management, with particular focus on equity-linking insurance products. This course can be viewed as a continuation and combination of actuarial mathematics for life contingencies in MATH 471/472 (traditional life insurance) and models in financial mathematics in MATH 476 (financial derivatives), as the main subjects of the course, equity-linking insurance products, are themselves hybrids of traditional life insurance and financial derivatives. Students will be able to learn various mathematical models and techniques to quantify, assess and management the interacting mortality/longevity risks and financial risks.

Although not intended for professional exam preparation, the coverage of the course does include certain parts of the education requirement for SOA Quantitative Finance and Investment Exams. Not only will students be introduced to latest research development in this emerging field, they can also reap the benefits of early exposure to study materials for certain fellowship exams. The course is aimed at upper level undergraduate students and graduate students wishing to extend their knowledge and math tools applicable to insurance and risk management.

The instructor will develop class notes for this course. A detailed list of topics to be covered on a weekly basis can be found in the attachment. Students will work in groups on small research projects. Grades will be determined on the basis of weekly homework (40%), a final presentation (30%) and a research report (30%).

Prerequisite: 471 and 476. (Students without prerequisite may register with instructor’s consent.)

References: