

個別課程英文授課大綱

表單編號：QP-T02-07-11

保存年限：10年

課程名稱 Course Title	(中文) 危險理論 (英文) Risk Theory		
授課教師 Instructor	謝明華	開課單位 Departments	風管
學分數 Credit(s)	3	修課對象 Target Students	Master students
課程目標 Course Objectives	This course introduces the basics of non-life insurance mathematics: survival, severity, frequency and aggregate models, and use statistical methods to estimate parameters of such models given sample data.		
課程大綱 Course Description	<p>This course reviews basic probability theory and gives a comprehensive introduction of non-life insurance mathematics:</p> <p>A. Severity Models</p> <ol style="list-style-type: none"> 1. Calculate the basic distributional quantities: 2. Describe how changes in parameters affect the distribution. 3. Recognize classes of distributions and their relationships. 4. Apply the following techniques for creating new families of distributions: 5. Identify the applications in which each distribution is used and reasons why. 6. Apply the distribution to an application, given the parameters. 7. Calculate various measures of tail weight and interpret the results to compare the tail weights. <p>B. Frequency Models</p> <p>For the Poisson, Mixed Poisson, Binomial, Negative Binomial, Geometric distribution and mixtures thereof:</p> <ol style="list-style-type: none"> 1. Describe how changes in parameters affect the distribution, 2. Calculate moments, 3. Identify the applications for which each distribution is used and reasons why, 4. Apply the distribution to an application given the parameters. 5. Apply the zero-truncated or zero-modified distribution to an application given the parameters 		

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	<p>C. Aggregate Models</p> <ol style="list-style-type: none"> 1. Compute relevant parameters and statistics for collective risk models. 2. Evaluate compound models for aggregate claims. 3. Compute aggregate claims distributions. <p>D. For severity, frequency and aggregate models</p> <ol style="list-style-type: none"> 1. Evaluate the impacts of coverage modifications: 2. Calculate Loss Elimination Ratios. 3. Evaluate effects of inflation on losses. <p>E. Risk Measures</p> <p>Calculate VaR, and TVaR and explain their use and limitations.</p>
<p style="text-align: center;">上課進度 Weekly Course Schedule</p>	<p>I Basic Probability (5 weeks)</p> <ol style="list-style-type: none"> 1. Common distributions 2. Moment Generating functions, Laplace transform 3. Conditional probabilities and expectations 4. Exponential distribution, hazard rate, and Poisson process <p>II Risk Theory</p> <p>Severity Models (2 weeks)</p> <p>Frequency Models (2 weeks)</p> <p>Aggregate Models (2 weeks)</p> <p>Severity, frequency and aggregate models (3 weeks)</p> <p>Risk Measures (2 weeks)</p>
<p style="text-align: center;">教學方式 Instructional Method</p>	<p>Lecture and in class discussion</p>
<p style="text-align: center;">課程要求 Course Requirements</p>	<p>Sufficient background in probability theory.</p>
<p style="text-align: center;">評量方式 Evaluation</p>	<p>Assignment: 20%</p> <p>Midterm: 20%</p> <p>Presentation: 20%</p> <p>Final exam: 40%</p>
<p style="text-align: center;">教材及參考書目 Textbooks & Suggested Materials</p>	<ol style="list-style-type: none"> 1. Loss Models: From Data to Decisions, (Third Edition), 2008, by Klugman, S.A., Panjer, H.H. and Willmot, G.E. (滄海圖書) 2. Ming-hua Hsieh (2009). Statistics, Sin-lu Publishing. (Chapter 5, 6, 7, 8) (新陸書局)
<p style="text-align: center;">課程相關 連結網址</p>	