

5.0 credits	30.0 h	2q
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Teacher(s) :	Ars Pierre ; Devolder Pierre ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Main themes :	The first part is devoted to the application of option theory to the value of life insurance contracts (contract with a guaranteed rate or unit linked contracts). The second part is an introduction to stochastic optimal control and its actuarial applications.
Aims :	The aim of this course is to apply the methods of stochastic finance in insurance and pension funds. At the end of the course, the students must be able to apply the concepts of quantitative finance to various concrete problems of insurance <i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i>
Content :	<p>Content</p> <p>The following topics will be developed:</p> <p>Part 1 / STOCHASTIC METHODS OF VALUATION</p> <ol style="list-style-type: none"> <li>1. Classical actuarial valuation</li> <li>2. Deflators, discounting and fair value</li> <li>3. Life insurance with participation</li> <li>4. Unit linked insurance</li> <li>5. Look back options and pricing</li> <li>6. Valuation of the surrender option</li> <li>7. Option on annuity</li> </ol> <p>PART 2 / STOCHASTIC CONTROL</p> <ol style="list-style-type: none"> <li>1. Presentation of the financial market</li> <li>2. Introduction to stochastic control</li> <li>3. Dynamic optimization in continuous time</li> <li>4. Introduction to Malliavin calculus</li> <li>5. Actuarial applications</li> </ol> <p>Methods</p> <p>In-class activities</p> <p>X0 Lectures</p> <p>X0 Exercices/PT</p> <p>At home activities</p> <p>X0 Exercices to prepare the lecture</p> <p>X0 Paper work</p>
Other infos :	<p>Evaluation : Class participation and written examination, in French</p> <p>Support : Slides provided through icampus</p>
Cycle and year of study :	<p><a href="#">&gt; Master [120] in Actuarial Science</a></p> <p><a href="#">&gt; Master [120] in Statistics: General</a></p> <p><a href="#">&gt; Master of arts in Business engineering</a></p>
Faculty or entity in charge:	LSBA