Course Descriptions None 2022-2023

Course Title	Life Insurance I
Course Code	EBC4119
ECTS Credits	6,5
Assessment	Whole/Half Grades

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
4	6-2-2023	31-3-2023		X			X

Level	Advanced
Coordinator	Antoon Pelsser For more information:a.pelsser@maastrichtuniversity.nl
Language of instruction	English
Goals	In this course we aim to teach students the basic principles of pricing life-insurance and pension contract and basic principles of measuring value creation on a market-consistent basis (Market-Consistent Embedded Value). The underlying principle for this course is the notion that the market-consistent value of a life-insurance or pension contract is based on the market-value of the Replicating Portfolio plus an 'add-on' for the remaining (unhedgeable) portions of the risk that are not covered by the Replicating Portfolio.
Description	PLEASE NOTE THAT THE INFORMATION ABOUT THE TEACHING AND ASSESSMENT METHOD(S) USED IN THIS COURSE IS WITH RESERVATION. A RE-EMERGENCE OF THE CORONAVIRUS AND NEW COUNTERMEASURES BY THE DUTCH GOVERNMENT MIGHT FORCE COORDINATORS TO CHANGE THE TEACHING AND ASSESSMENT METHODS USED. THE MOST UP-TO-DATE INFORMATION ABOUT THE TEACHING/ASSESSMENT METHOD(S) WILL BE AVAILABLE IN THE COURSE SYLLABUS. 1. Pricing by Replication: Role of the actuary; Basic idea fair value; Bonds; Forward rates; Duration; Inflation. 2. Equity Options: Unit linked insurance; Intro to option theory; Equity derivatives; With-profit policies. 3. Non-Financial Risks: Non-hedgeable risks; Modelling of mortality. 4. Utility-Based Pricing: Optimal investment strategies with non-hedgeable risks. 5. Time-Consistent and Market-Consistent Pricing: Two-step pricing operator; Pricing in continuous time. 6. Interest Rate Risk: Interest rate swaps; Swaptions; Minimum return guarantees. 7. Applications: Market-consistent embedded value; Solvency II; IFRS 17. Study-load and grading : * Study-load = 6.5 ECTS (= 182 study-hours). * The course takes 7 weeks, with 4 contact hours every week plus mandatory homework assignments every week. * Students work in groups of max. 3 students on the homework assignments. Each post-discussion two groups present their solution to the tutorial group, which will then be discussed by the tutorial group. * Please note that the homework assignments are based on real-life cases. This means that the assignments are relatively unstructured. This also means that there is usually not a unique "correct" solution for the assignment. It is therefore important that students can motivate and defend the choices they have made to obtain their solution. Discussing the pro's and con's of different solutions will be an important aspect of the post-discussion. * Average grade for all homework-presentations in the post-discussion counts for 50% of final grade. Final written exam counts for 50% of final grade.
Literature	To be announced.
Prerequisites	Bachelor Level Econometrics and Operations Research, including preparatory courses Actuarial Sciences.
Teaching methods	PBL / Lecture / Assignment
Assessment methods	Participation / Written Exam
Evaluation in previous academic year	For the complete evaluation of this course please click http://iwio-sbe.maastrichtuniversity.nl/rapporten.asp?referrer=codeUM

This course belongs to the following programme / specialisation

Master Econometrics and Operations Research	E&OR Electives
SBE Exchange Master	Master Exchange Courses
SBE Non Degree Courses	Master Courses