Course Descriptions None 2020-2021

Course Title	Actuarial Mathematics
Course Code	EBC2122
ECTS Credits	6,5
Assessment	Whole/Half Grades

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
4	1-2-2021	26-3-2021			X		X

Level	Advanced
Coordinator	Marc Schröder For more information:m.schroder@maastrichtuniversity.nl
Language of instruction	English
Goals	See course contents.

Description

PLEASE NOTE THAT THE INFORMATION ABOUT THE TEACHING AND ASSESSMENT METHOD(S) USED IN THIS COURSE IS WITH RESERVATION. THE INFORMATION PROVIDED HERE IS BASED ON THE COURSE SETUP PRIOR TO THE CORONAVIRUS CRISIS. AS A CONSEQUENCE OF THE CRISIS, COURSE COORDINATORS MAY BE FORCED 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. * In order to satisfy the Econometrics & OR curriculum, you have to choose two of the
courses EBC2091, EBC2120, EBC2121, EBC2122 in period 4.

* This course is an Actuarial elective (cannot be used as an IBE/IES/Infonomics elective).

The principal aim of this course is to provide students with a solid grounding in the subject of life contingencies for a single life, and experience of its application to the analysis of life insurance and life annuity (including pension) contracts.
This subject arises through a fusion of compound interest theory with probability theory, and provides the mathematical framework necessary for analysing such contracts, which are essentially long term financial transactions in which the various cash flows at different times are contingent on the death (life insurance) or survival (life annuities) of one or more specified human lives. Having developed this framework, we can address issues such as how to determine the premium that should be charged for a certain life insurance contract, including allowance for expenses and/or profit, and how to determine the value that should be represented in the balance sheet of a life insurance company in respect of the policies that it has sold. These examples reflect the two main traditional areas of actuarial activity within a life insurance company: pricing and reserving.
The course introduces probabilities of survival and death and it is shown how these may be represented within and extracted from life tables. Compound interest theory is then combined with such probabilities to analyse and evaluate both life insurance benefits and life annuity benefits. With the relevant theory fully developed, the course then becomes somewhat more applied. Premium calculation is explored in detail first, followed by the determination and application of reserves.

Literature	Hans U. Gerber (1997). Life Insurance Mathematics. 3rd edition Springer.
Prerequisites	First two years of the Econometrics and OR bachelor program, in particular Mathematics, Probability Theory, and Mathematical Statistics.
Teaching methods	PBL / Lecture / Assignment
Assessment methods	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

Bachelor Econometrics and Operations Research	Year 3 Core Course(s)
Bachelor Econometrics and Operations Research	Year 3 Elective Course(s)
SBE Exchange Bachelor	Bachelor Exchange Courses
SBE Exchange Master	Bachelor Exchange Courses
SBE Non Degree Courses	Bachelor Courses