

Announcement WiSe 2020/21

Lecture in Mathematical Finance

Actuarial Mathematics for Pensions

Prof. Dr. Matthias Scherer

Area: / Modulnr.: Mathematical Finance / MA3452

Course Structure: Lecture: 2h Exercises: 1h

Content: In this course, students will learn the basics of occupational pension schemes and the actuarial methods required to value pension liabilities. In particular, the following topics will be covered:

- 1) Typical examples for occupational pension schemes (defined benefit plans, defined contribution plans, cash balance plans).
- 2) Methods to derive mortality and disability probabilities.
- 3) How to calculate the present value of pension liabilities.
- 4) Actuarial methods under German accounting principles to value pension liabilities (book reserves in the balance sheet approach).
- 5) Actuarial methods under international accepted accounting principles to value pension liabilities (projected unit credit method, service cost, interest cost, actuarial gains/losses).

Prerequisite: MA1401 Introduction to Probability, MA2402 Basic Statistics or MA0009 Introduction to Probability and Basic Statistics

Literature:

Doetsch/Oecking/Rath/Reichenbach/Rhiel/Veit (2008): Betriebliche Altersversorgung - ein praktischer Leitfaden. Rudolf Haufe Verlag GmbH & Co. KG, München.

Hans U. Gerber, James C. Hickman, Donald A. Jones, Cecil J. Nesbitt, Newton L. Bowers (1997): Actuarial Mathematics. Society of Actuaries, second edition.

Klaus Heubeck (2005): Richttafeln 2005 G - Textband und Programm Heureka 2. Verlag Heubeck-Richttafeln-GmbH, Köln.

Thomas Moller, Mogens Steffensen (2007): Market-Valuation Methods in Life and Pension Insurance.

International Series on Actuarial Science. Cambridge Univ Pr. Schriftenreihe Angewandte Versicherungsmathematik, Heft 25 (1997; herausgegeben von Edgar Neuburger): Mathematik und Technik betrieblicher Pensionszusagen. Verlag Versicherungswirtschaft e.V., Karlsruhe.

Certificate: Exam, 5 CP

Location/ Lecture/Exercises: see TUMonline