

EAA Seminar
**CERA, Module 0:– A Refresher Course in Financial
Mathematics and Risk Measurement**

2/3 December 2019 | Düsseldorf, Germany



Organised by the EAA - European Actuarial Academy GmbH

Introduction

CERA Education

Over the last decade, the concept of Enterprise Risk Management (ERM) has gained significant momentum in the insurance industry and beyond. This came with the recognition of risk as being something not per se to be avoided, but to be optimally exploited in the frame of a company's risk appetite. This is reflected in regulatory changes, such as Solvency II requiring an actuarial and a risk management function in all (re-)insurance undertakings. Actuaries should see this as an opportunity to broaden their role, and to show that they are ideally equipped to carry out these tasks.

Against this backdrop, in November 2009, several actuarial associations launched the CERA credential as a global risk management designation for actuaries which:

- Encompasses a world- - class curriculum that combines actuarial science with the theoretical, practical and professional principles of ERM
- Instils the highest professional standards, with an impeccable code of ethics and rigorous educational requirements

- Is recognised worldwide and transferable internationally
- Applies both qualitative and quantitative insight to ERM, and
- Equips risk management professionals to empower better business decisions and more profitable business developments

Based on the education and examination system of the German Actuarial Association, the EAA offers a series of training courses and exams (through DAV) to study for the CERA designation to all actuaries who want to deepen their knowledge in Enterprise Risk Management.

The Seminar **A Refresher Course in Financial Mathematics and Risk Measurement**

The seminar gives an introduction to modern financial mathematics, derivative pricing and risk measurement. It is designed to prepare actuaries without adequate training in these fields for the quantitative parts of the CERA education. The seminar is moreover an ideal learning opportunity for actuaries who want to get acquainted with or refresh their knowledge in these highly relevant fields.

The seminar begins with a repetition of basic concepts in probability theory including characteristics of random variables such as moments and quantiles. In this context we will also introduce important distribution-based risk measures such as VaR and Expected shortfall. In order to prepare the analysis of dynamic financial models we introduce the idea of conditional expectations, we discuss stochastic processes in discrete time. The seminar continues with an introduction to financial mathematics. We study risk neutral valuation and the hedging of derivatives in discrete-time models, followed by a brief introduction to the modern theory of coherent risk measures. The last part of the seminar is devoted to an introduction to financial mathematics in continuous time. Topics covered include stochastic processes in continuous time such as Brownian motion and the Ito formula, the Black Scholes model and the pricing and hedging of simple stock and bond options. The seminar consists of lectures interspersed by short exercise sessions

Participants

The seminar is open to all persons who are interested in deepening their quantitative skills in the fields of financial mathematics and risk measurement.

During this seminar, you will not need your laptop.

Purpose and Nature

The 1.5 day seminar serves a double purpose. On the one hand, it is a bridging course designed to prepare actuaries with a more qualitative background for the quantitative parts of the CERA education. On the other hand, it is an independent refresher course for actuaries wanting to brush up their quantitative skills in the fields of financial mathematics and risk measurement.

This seminar is not a formal part of the CERA education.

Please visit www.ceraglobal.org for more information on the CERA designation.

Language

The language of the seminar will be English.

Lecturers

Rüdiger Frey

Rüdiger Frey is Professor of Mathematics and Finance at the Vienna University of Economics and Business (WU). Prior to that, he held positions as Professor of Optimization and Financial Mathematics at the University of Leipzig and various academic positions at the University of Zurich and at the Federal Institute of Technology (ETH) in Zurich. He holds a diploma in mathematics from the University of Bonn where he received his PhD in financial economics in 1996. His main research fields are quantitative risk management, dynamic credit risk models and the pricing and hedging of derivatives under incompleteness and market frictions. Rüdiger has published research papers in leading international academic journals and has given seminars at a number of important international conferences and institutions. He is coauthor of the popular book "Quantitative Risk Management: Concepts Techniques & Tools" (Princeton University Press, second edition 2015), which was rated as one of the Top 10 Technical Books of 2006 on Financial Engineering, by Financial Engineering News. Rüdiger has also been involved in consulting projects for Swiss and German insurance companies and banks and is frequently giving practitioner training courses.

Jochen Wolf

Since 2005, Jochen Wolf has been Professor for Mathematics and Economics at the Hochschule Koblenz. Before, he worked for several years at the German financial supervisor BaFin where he was responsible for various aspects of insurance supervision. At BaFin he was also involved in the Solvency II project. Prior to joining BaFin, Prof. Wolf held various research positions in stochastic analysis at Universität Jena and at the Université Paris-Nord. He holds a diploma in mathematics from the Universität Mainz and a doctorate in mathematics (focus probability) from the Universität Jena. Professor Wolf is actively involved in the actuarial education at the German actuarial association (DAV).

Preliminary Programme

Monday, 2 December 2019

08:45 – 09:00	Registration
09:00 – 09:15	Introduction and Welcome (EAA)
09:15 – 10:45	Probability Theory and Elementary Risk Measures
10:45 – 11:15	Coffee Break
11:15 – 13:00	Probabilistic Tools for Dynamic Financial Models and Discrete Stochastic Processes
13:00 – 14:15	Lunch
14.15 – 15:45	Risk Neutral Valuation
15:45 – 16:00	Coffee Break
16:00 – 17:00	Risk Neutral Valuation and Risk Measures
17:00 – 17:45	Tools for Continuous Time Finance

Tuesday, 3 December 2019

09:00 – 10:45 Tools for Continuous-Time Finance
10:45 – 11:00 Coffee Break
11:00 – 13:00 The Black Scholes Model and Applications
13:00 – 14:15 Lunch

Fees & Registration

Please register for the seminar as soon as possible because of the expected demand. If there are more persons interested in this seminar than places available we will give priority to the registrations received first. Please send your registration as soon as possible by using our online registration form at www.actuarial-academy.com.

Your registration is binding. Cancellation is only possible up to 4 weeks before the first day of seminar. If you cancel later, the full seminar fee is due. You may appoint someone to take your place, but must notify us in advance. EAA has the right to cancel the event if the minimum number of participants is not reached.

Please always give your invoice number when you effect payment. All bank charges are to be borne by the participant. We will send you an invoice, please allow a few days for handling.

Your early-bird registration fee is € 840.00 plus 19 % VAT until 2 October 2019. After this date the fee will be € 990.00 plus 19 % VAT.

Venue & Accommodation

Tryp Düsseldorf Airport
Am Schimmersfeld 9
40880 Ratingen, Germany
[Hotel website](#)

We have arranged special prices for accommodation. The special rate is 95,00 € per night, including breakfast and VAT. It is valid for bookings by 23 November 2019 out of our allotment "EAA Seminar". Our allotment includes a limited number of rooms. Kindly book your accommodation directly with the hotel by sending an email to reservations.tryp.dusseldorf.airport@melia.com (reference code *EAA seminar*), and note the hotel's reservation terms and conditions and the hotel's cancellation policy

CPD

For this seminar, the following CPD points are available under the CPD scheme of the relevant national actuarial association:

Austria: 10 points
Belgium: 10 points

Bulgaria:	12 points
Spain – CAC:	11 hours
Spain – IAE:	10 hours
Czech Republic:	2-3 points (individual accreditation)
Estonia:	10,5 hours
Finland:	7,25 points
France:	40 points
Germany:	11 hours
Hungary:	11 hours
Ireland:	10.5 hours
Italy:	approx. 4 credits (GdLA individual accreditation)
Latvia:	11 hours
Netherlands:	approx. 10,5 PE-points (individual accreditation)
Portugal:	10,5 hours
Russia:	40 points
Slovakia:	8 CPD points
Slovenia:	50 points
Switzerland:	15 points

No responsibility is taken for the accuracy of this information.