



ACTUARIAL ASSOCIATION OF EUROPE

AAE Webinar: Actuaries and the emergence of data science

May 10th, 2023

AAE Education Committee

Agenda

10:00-10:05	Welcome and introduction
10:05-11:30	Actuaries and the emergence of data science
11:30-11:50	Update on current issues
11:50-12:00	Closing and wrap-up

Presenters



Colm Fitzgerald



Henning Wergen



ACTUARIAL ASSOCIATION OF EUROPE

Assessment of the AAE Core Syllabus

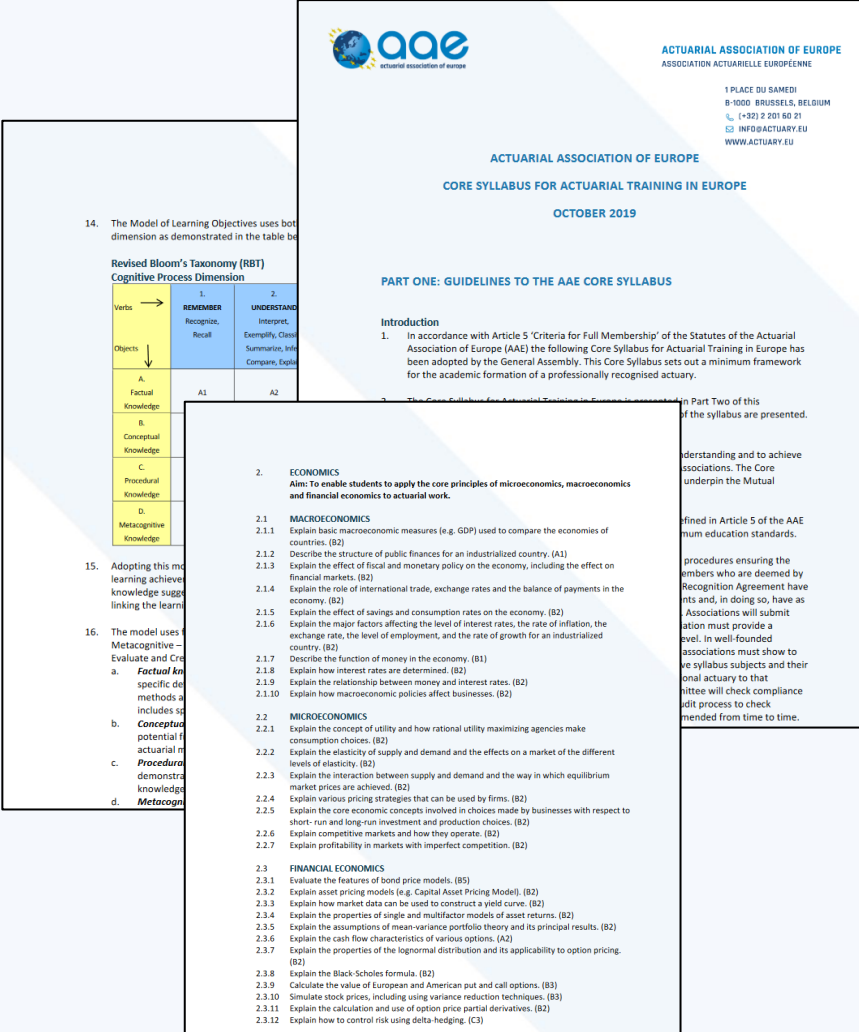
May 10th, 2023

Henning Wergen

AAE Core Syllabus for Actuarial Training in Europe

- Core Syllabus sets out minimum framework for actuarial education
- Harmonisation of qualification throughout Europe
- Updated in 2019 with the requirement that all member associations have to fulfil requirements by end of 2022

Mutual Recognition Agreement



ACTUARIAL ASSOCIATION OF EUROPE
ASSOCIATION ACTUARIELLE EUROPÉENNE

1 PLACE DU SAMEDI
B-1000 BRUSSELS, BELGIUM
☎ +32 2 201 80 71
✉ INFO@ACTUARY.EU
WWW.ACTUARY.EU

ACTUARIAL ASSOCIATION OF EUROPE
CORE SYLLABUS FOR ACTUARIAL TRAINING IN EUROPE
OCTOBER 2019

PART ONE: GUIDELINES TO THE AAE CORE SYLLABUS

Introduction

1. In accordance with Article 5 'Criteria for Full Membership' of the Statutes of the Actuarial Association of Europe (AAE) the following Core Syllabus for Actuarial Training in Europe has been adopted by the General Assembly. This Core Syllabus sets out a minimum framework for the academic formation of a professionally recognised actuary.

2. **ECONOMICS**
Aim: To enable students to apply the core principles of microeconomics, macroeconomics and financial economics to actuarial work.

2.1 **MACROECONOMICS**
2.1.1 Explain basic macroeconomic measures (e.g. GDP) used to compare the economies of countries. (B2)
2.1.2 Describe the structure of public finances for an industrialized country. (A1)
2.1.3 Explain the effect of fiscal and monetary policy on the economy, including the effect on financial markets. (B2)
2.1.4 Explain the role of international trade, exchange rates and the balance of payments in the economy. (B2)
2.1.5 Explain the effect of savings and consumption rates on the economy. (B2)
2.1.6 Explain the major factors affecting the level of interest rates, the rate of inflation, the exchange rate, the level of employment, and the rate of growth for an industrialized country. (B2)
2.1.7 Describe the function of money in the economy. (B1)
2.1.8 Explain how interest rates are determined. (B2)
2.1.9 Explain the relationship between money and interest rates. (B2)
2.1.10 Explain how macroeconomic policies affect businesses. (B2)

2.2 **MICROECONOMICS**
2.2.1 Explain the concept of utility and how rational utility maximizing agencies make consumption choices. (B2)
2.2.2 Explain the elasticity of supply and demand and the effects on a market of the different levels of elasticity. (B2)
2.2.3 Explain the interaction between supply and demand and the way in which equilibrium market prices are achieved. (B2)
2.2.4 Explain various pricing strategies that can be used by firms. (B2)
2.2.5 Explain the core economic concepts involved in choices made by businesses with respect to short-run and long-run investment and production choices. (B2)
2.2.6 Explain competitive markets and how they operate. (B2)
2.2.7 Explain profitability in markets with imperfect competition. (B2)

2.3 **FINANCIAL ECONOMICS**
2.3.1 Evaluate the features of bond price models. (B5)
2.3.2 Explain asset pricing models (e.g. Capital Asset Pricing Model). (B2)
2.3.3 Explain how market data can be used to construct a yield curve. (B2)
2.3.4 Explain the properties of single and multifactor models of asset returns. (B2)
2.3.5 Explain the assumptions of mean-variance portfolio theory and its principal results. (B2)
2.3.6 Explain the cash flow characteristics of various options. (A2)
2.3.7 Explain the properties of the lognormal distribution and its applicability to option pricing. (B2)
2.3.8 Explain the Black-Scholes formula. (B2)
2.3.9 Calculate the value of European and American put and call options. (B3)
2.3.10 Simulate stock prices, including using variance reduction techniques. (B3)
2.3.11 Explain the calculation and use of option price partial derivatives. (B2)
2.3.12 Explain how to control risk using delta-hedging. (C3)

AAE Core Syllabus for Actuarial Training in Europe

Actuarial Models

Actuarial Risk
Management

Finance

Economics

Financial
Systems

Assets

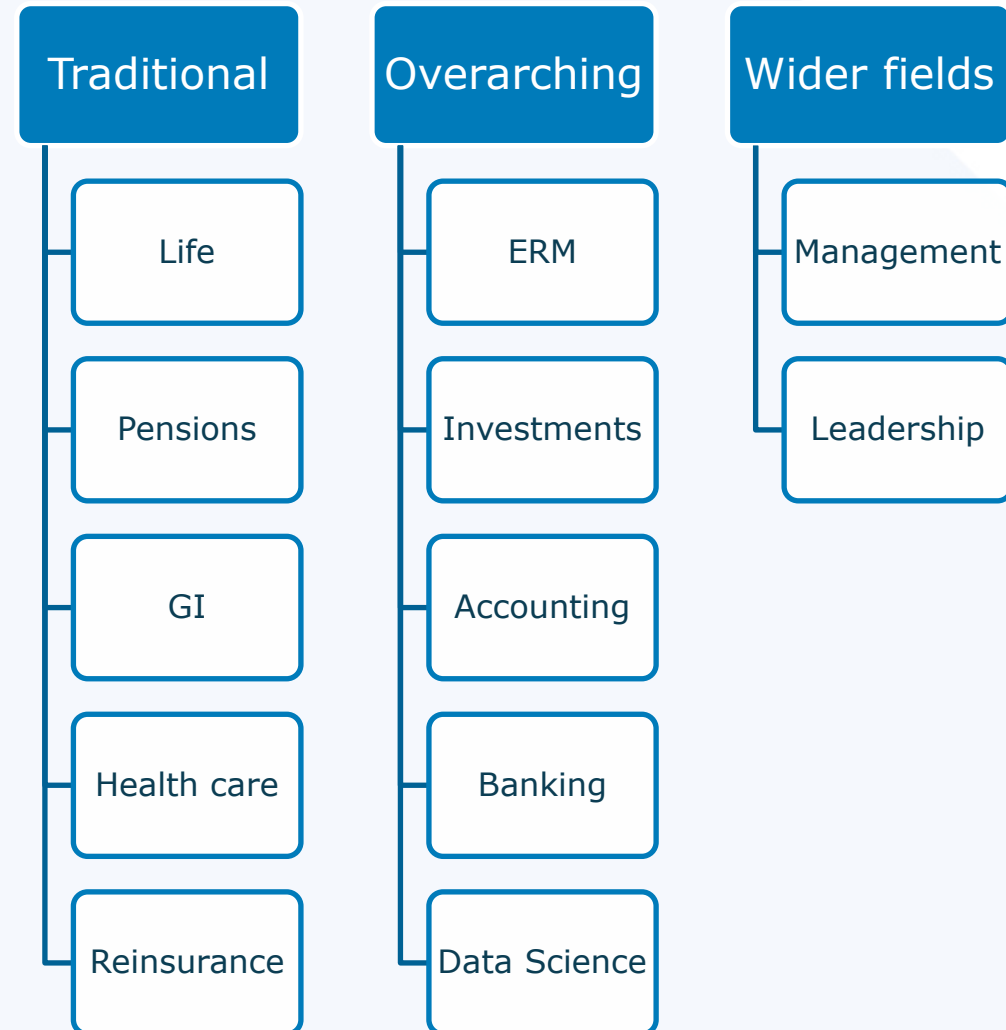
Statistics

Data and Systems

Personal and
actuarial
professional
practice

AAE Core Syllabus – Practical experience and Specialisation

- Every association needs to provide a qualification route that guarantees two years of practical experience
- Based on the nine essential learning areas a specific specialisation needs to be covered (via thesis, exam, ...)



Asking for self assessment

Automatisches Speichern 2021-12-AAE-Syllabus-Coverage_final.xlsx - Schreibges...

Henning Wergen

AAE Cory Syllabus Coverage Report

Member Association:

Education route:

Survey completed by:

Member associations of the AAE that are bound to the Mutual Recognition Agreement have to fulfil minimum standards as laid out in the AAE Core Syllabus. It is the responsibility of the AAE Education Committee to check compliance.

Member associations will have to provide standardised information for the compliance check (mapping of the national route(s) to fulfil requirements vs. AAE Core Syllabus)

This spreadsheet has to be used by member associations of the AAE. The following needs to be regarded:

- * If an association has its own education syllabus which is the basis for different education routes (e.g. via universities) associations have to provide a mapping of the association's syllabus and the AAE Core Syllabus as well as additional information on the procedures to ensure the fulfillment of the requirements; in other cases a spreadsheet for every education route has to be provided
- * Information has to be provided at least on a topic level with course information, learning objectives or competencies matching the AAE Core Syllabus sub-topic or learning objective
- * If it can be provided by the association: Information on the coverage of a specific Learning Objective can also be provided, this might help associations to produce the mapping
- * Information with regard to Bloom's Taxonomy can be provided for every learning objective, information with regard to ECTS can be provided based on every sub-topic
- * Cells marked in grey have to be filled out; cells marked in light green are optional (as support or for additional information)

Automatisches Speichern 2021-12-AAE-Syllabus-Coverage_final.xlsx - Schreibges...

Topic / Sub-Topic	Learning Objective	Tax.	Topic	Coverage / Learning Objective / competencies	Tax.	ECTS
AAE Core Syllabus						
Economics						
Macroeconomics						
	Explain basic macroeconomic measures (e.g. GDP) used to compare the economies of countries.	B2			B2	
	Describe the structure of public finances for an industrialized country.	A1				
	Explain the effect of fiscal and monetary policy on the economy, including the effect on financial markets.	B2				
	Explain the role of international trade, exchange rates and the balance of payments in the economy.	B2				
	Explain the effect of savings and consumption rates on the economy.	B2				
	Explain the major factors affecting the level of interest rates, the rate of inflation, the exchange rate, the level of employment, and the rate of growth for an industrialized country.	B2				
	Describe the function of money in the economy.	B1				
	Explain how interest rates are determined.	B2				
	Explain the relationship between money and interest	B2				
	Explain how macroeconomic policies affect businesses.	B2				
Microeconomics						
	Explain the concept of utility and how rational utility maximizing agencies make consumption choices.	B2				
	Explain the elasticity of supply and demand and the effects on a market of the different levels of elasticity.	B2			B3	
	Explain the interaction between supply and demand and the way in which equilibrium market prices are achieved.	B2				
	Explain various pricing strategies that can be used by firms.	B2				
	Explain the core economic concepts involved in choices made by businesses with respect to short-run and long-run investment and production choices.	B2				
	Explain competitive markets and how they operate.	B2				
	Explain profitability in markets with imperfect	B2				
Financial economics						

Automatisches Speichern 2021-12-AAE-Syllabus-Coverage_final.xlsx - Schreibges...

communicated.																			
Create appropriate permanent documentation for a work product.	A6																		
Problem solving and decision making																			
Apply the actuarial control cycle appropriately.	C3																		
Evaluate whether all material factors have been considered when designing a solution.	A4																		
Analyze and prioritize stakeholder needs when designing a solution.	A5																		
Distinguish material factors from other factors (e.g. material external forces from other external forces).	B2																		
Understand the purpose of a strategy and how it relates to competitive advantages.	C2																		
Explain how the culture and structure of an organization affect decision-making processes.	C3																		
Apply a decision-making process to a particular case study.	C3																		
Apply common time management techniques in small project for the benefits of own work and team work.	D2																		
Explain the factors to consider when deciding whether to escalate a project decision to a higher level of management.	C6																		
Use common project management techniques to design and implement a work plan.																			
Professional standards																			
Explain the distinguishing features of a profession.	A2																		
Understand the importance of professional standards (code of conduct, qualification standards, standards of practice, etc.) and ethics in an actuary's work.	A2																		
Explain the need for a discipline process for a profession.	A2																		
Understand the circumstances which could give rise to a charge of professional misconduct and how the association's discipline process could apply to such a case.	A2																		
Explain how association's standards of practice may affect a C2																			

European Actuarial Day

- 1 day online congress
- 27 June 2023
- Organised by AAE
- Combination of high-class keynotes and technical presentations
- *Free participation*



Program 27 June 2023



The program of this year's European Actuarial Day will feature two high-ranking Keynote Sessions and twelve additional presentations in parallel sessions. More details on presentations, speakers and time schedule is available on the event page www.ead2023.org.



2023 Theme: „TOWARDS THE ACTUARY OF THE FUTURE - Build on our traditional values and be innovative in solving the current and upcoming challenges“

09:30	WELCOME Lutz Wilhelmy, AAE	
PLENARY I: Current State of Affairs and Upcoming Challenges for Actuaries Fabio Massimo Castaldo, European Parliament, Giampaolo Crenca, AAE (Moderator), Lutz Wilhelmy, AAE (Moderator)		
10:30	Cyber Risk Management Strategies Marco Pirra	Insurance and the Adoption of Climate Adaptation Strategies by Policyholders Bruno Dotti, Federica Zappari
11:00	Cyber Incident Reports: Extrapolating Severity Using Neural Networks Justin Kher, Olivier Lopez, Hugo Rapior	Does Consumers' Attention Influence the Price of Wine? Carmen González-Velasco
11:30	Recent Developments in Reinsurance and CAT Bond Markets for Catastrophic Risks Fernando Mierzejewski	Saving for Retirement Through Consumption: An Application for Portugal Abraham Hernández
12:00	Lunch Break	
13:30	Insurance Data Science Marketing Actuary Claudio Giancaterino	Penalized Regression – Between Credibility and GBMs Jan Kütke
14:00	Attractiveness of an Actuarial Career Inga Helmane	Non-crossing Neural Network Quantile Regression Estimation for Driving Data with Telematics Xerxo Vidal-Ulana
14:30	Customer Insurance: Call for New Data Analysis Approaches Paola Scarabotto	Inflation Impact on Non-life Reserving Romain Nobis
15:00	PLENARY II: Addressing Major Challenges: ESG and Sustainability Reporting Jutta Bopp, Swiss Re, Sven Gentner, European Commission, N.N., Jérôme Crugnola-Humbert, AAE (Moderator)	
FAREWELL Giampaolo Crenca, AAE		



ACTUARIAL ASSOCIATION OF EUROPE

Actuarial House

1 Place du Samedi 1000

Brussels Belgium

www.actuary.eu

Follow us on [LinkedIn](#)

and twitter: [@InfoAAE](#)