

ACTUARIAL ASSOCIATION OF EUROPE

Implementing and auditing the new AAE
Core Syllabus requirements

4 February 2021

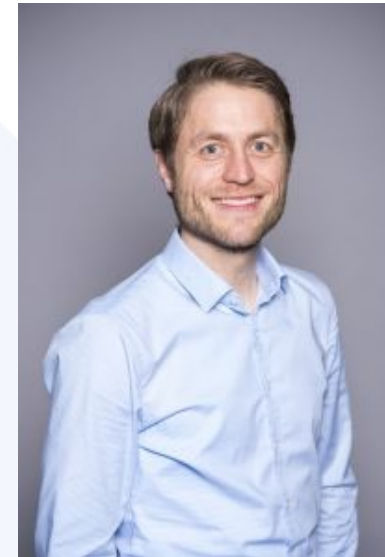
Agenda and presenters

Agenda:

- Welcome and introduction
- AAE Core Syllabus: Requirements and Audit
- Q&A

Presenters:

- Rafael Moreno
- Henning Wergen



AAE Educational Requirements

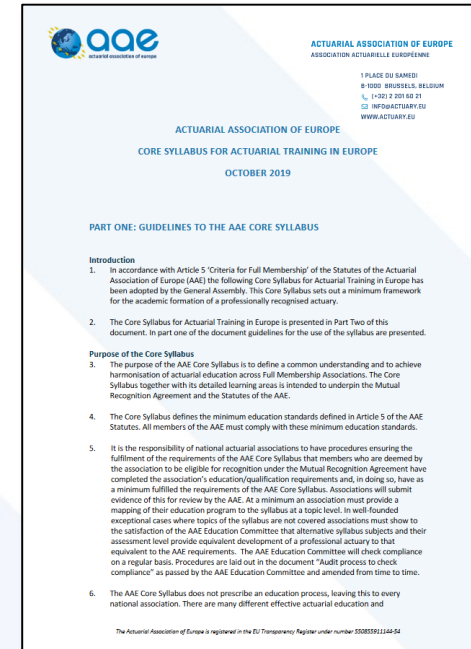
- Statutes of AAE (October 2020):
 - Aims (Art. 2):
 - Prescribing educational standards
 - Supporting mutual recognition of actuaries among Member Associations
 - Criteria for Full Membership (Art. 5):
 - Actuarial associations applying for full membership must [...] comply with minimum education standards as set out in the AAE's Core Syllabus for Actuarial Training
 - Mutual Recognition (Art. 6):
 - Full Member Associations must sign the AAE Agreement [...] on a general system for the recognition of higher education diplomas awarded on completion of professional education and training

AAE Core Syllabus – Guidelines and Content

- The latest version of the AAE Core Syllabus was passed by the General Assembly in October 2019
 - Available: AAE Website / About the AAE / Governance ([Link](#))
- The joint document includes *guidelines* (explaining the use and the structure of the syllabus) and the *syllabus* (stating the content) itself
- Member associations of the AAE have to implement the requirements of the AAE Core Syllabus latest by the end of 2022 (decision by General Assembly)
 - Interpretation: Candidates starting their actuarial education afterwards have to follow the AAE Core Syllabus 2019
- AAE Core Syllabus has been reviewed and accepted by the IAA Education Committee such that AAE member associations will not be reviewed by the IAA separately

AAE Core Syllabus – Guidelines and Content

- Guidelines to the syllabus:
 - Introduction
 - Purpose of the Core Syllabus
 - Define common understanding
 - Underpin MRA
 - Structure of the Syllabus
 - Basic actuarial education with nine learning areas / Advanced skills / Necessary prerequisites
 - Appropriate breadth of coverage
 - Regular check for compliance by Education Committee
 - Depths of coverage
 - Content presented via learning objectives
 - Classification via revised Bloom's Taxonomy
 - Mutual Recognition Agreement
 - Core Syllabus Development



AAE Core Syllabus – Guidelines and Content

- Bloom's Taxonomy:

Verbs → Objects ↓	1. REMEMBER Recognize, Recall	2. UNDERSTAND Interpret, Exemplify, Classify, Summarize, Infer, Compare, Explain	3. APPLY Execute, Implement	4. ANALYZE Differentiate, Organize, Attribute	5. EVALUATE Check, Critique	6. CREATE Generate, Plan, Produce
A. Factual Knowledge	A1	A2	A3	A4	A5	A6
B. Conceptual Knowledge	B1	B2	B3	B4	B5	B6
C. Procedural Knowledge	C1	C2	C3	C4	C5	C6
D. Metacognitive Knowledge	D1	D2	D3	D4	D5	D6

AAE Core Syllabus – Guidelines and Content

- Bloom's Taxonomy – examples:
 - 1.7.1 Explain the concepts of Monte Carlo simulation. (B2)
 - 3.3.3 Calculate the value of a forward contract. (B3)
 - 3.4.4 Calculate investment return on a project using different methods and evaluate each method. (C5)
 - 6.1.4 Describe common data structures and data storage systems. (A1)
 - 9.2.10 Use common project management techniques to design and implement a work plan. (C6)

AAE Core Syllabus – Guidelines and Content

- Content of the Syllabus
 - Statistics
 - Economics
 - Finance
 - Financial Systems
 - Assets
 - Data and Systems
 - Actuarial Models
 - Actuarial Risk Management
 - Personal and Actuarial Professional Practice
 - Advanced Skills
 - Foundation Mathematics

AAE Core Syllabus and Content

- Content of the Syllabus
 - Statistics
 - Random Variables
 - Statistical Inference
 - Graduation and statistical tests
 - Regression
 - Bayesian statistics and credibility theory
 - Stochastic processes and time series
 - Simulation
 - Economics
 - Macroeconomics
 - Microeconomics
 - Financial economics

AAE Core Syllabus and Content

- Content of the Syllabus
 - Finance
 - Financial reporting and taxation
 - Securities and other forms of corporate finance
 - Financial mathematics
 - Corporate finance
 - Financial systems
 - Role and structure of financial systems
 - Participants in financial systems
 - Financial products and benefits
 - Factors affecting financial system development and stability

AAE Core Syllabus and Content

- Content of the Syllabus
 - Assets
 - Investments and markets
 - Asset valuation
 - Portfolio management
 - Investment strategy and performance measurement
 - Data and systems
 - Data as a resource for problem solving
 - Data analysis
 - Statistical learning
 - Professional and risk management issues
 - Visualizing data and reporting

AAE Core Syllabus and Content

- Content of the Syllabus
 - Actuarial models
 - Principles and actuarial modelling
 - Fundamentals of severity models
 - Fundamentals of frequency models
 - Fundamentals of aggregate models
 - Survival models
 - Actuarial applications
 - Actuarial risk management
 - The risk environment
 - Risk identification
 - Risk measurement and modelling
 - Risk mitigation and management
 - Risk monitoring and communication

AAE Core Syllabus and Content

- Content of the Syllabus
 - Personal and actuarial professional practice
 - Effective communications
 - Problem solving and decision making
 - Professional standards
 - Professionalism in practice
 - International and institutional awareness of professional standards
 - Advanced skills
 - Life, pensions, general insurance, ERM, investments, health care, accounting, banking, social security, reinsurance, management / leadership, data science

AAE Core Syllabus and Content

- Content of the Syllabus – a deeper look
 - Statistics
 - Regression (Art. 1.4)
 - Explain linear relationships between variables using correlation analysis and regression analysis. (B2)
 - Explain the fundamental concepts of a generalized linear model (GLM), and describe how a GLM may be applied. (B3)
 - Estimate parameters for these models and perform diagnostic tests including checking assumptions and evaluating model fit. (B5)

AAE Core Syllabus – Guidelines for review

- Art. 5:
 - It is the *responsibility of national actuarial associations* to have procedures ensuring the fulfilment of the requirements of the AAE Core Syllabus that members who are deemed by the association to be eligible for recognition under the Mutual Recognition Agreement have completed the association's education/qualification requirements and, in doing so, have as a minimum fulfilled the requirements of the AAE Core Syllabus

AAE Core Syllabus – Guidelines for review

- Art. 5 (cont.):
 - Associations *will submit evidence* of this for review by the AAE
 - At a minimum an association must *provide a mapping* of their education program to the syllabus at a topic level
 - In well-founded exceptional cases where topics of the syllabus are not covered associations must show to the satisfaction of the AAE Education Committee that *alternative syllabus subjects* and their assessment level provide equivalent development of a professional actuary to that equivalent to the AAE requirements

AAE Core Syllabus – Guidelines for review

- Art. 5 (cont.):
 - The AAE Education Committee will check compliance on a regular basis
 - Procedures are laid out in the document “Audit process to check compliance” as passed by the AAE Education Committee and amended from time to time
- Art. 18:
 - A *suggested Bloom’s Taxonomy category* is included in the AAE Core Syllabus for each sub-topic as an indication of the depth recommended
 - This is *not meant to be prescriptive*, but is intended to assist in setting out a guideline for the depth of knowledge and skill needed for an actuary

AAE Core Syllabus – Guidelines for review

- Art. 19:
 - In addition, and as support for qualification routes only based on university education, it should be noted that the complete workload of the education to become an actuary (including prerequisites, all learning areas and advanced skills as laid out in the Core Syllabus) *should not be less than 240 credit points* according to European Credit Transfer System(ECTS), including a significant number obtained in an advanced study program (Master's degree) and not less than 90 credit points devoted to the nine learning areas as described in the AAE Core Syllabus

AAE Core Syllabus – Guidelines for review

- Art. 20:
 - Several competencies that are laid out in the Learning Objectives might not be obtained only through theoretical studies
 - Therefore a *minimum of two years' of practical actuarial experience* should be required by all Full Membership Association to fulfil the requirements of the Core Syllabus

AAE Core Syllabus – Review principles

- Document of the AAE Education Committee defining process for reviews
 - Passed by the committee in spring 2020
- General rules to support and interpret principles of the AAE Core Syllabus Guidelines

AAE Core Syllabus – Review principles

- The AAE Education Committee will perform a check for compliance on a regular basis (e.g. every two years)
 - Audit will take place at the same time for all member associations
 - Follow-up reviews might be light touch
- Member associations will have to provide standardised information for the compliance check (mapping of the national routes to fulfil requirements vs. AAE Core Syllabus)
 - Spreadsheet to be used by member associations

AAE Core Syllabus – Review principles

- All nine basic learning areas need to be covered
 - The national association has to present its assessment of the coverage of the education route or education routes that qualify for the purposes of the mutual recognition agreement, whereas a minimum standard covered by different qualification routes will be audited
 - The AAE Education Committee will ask for prove by the association under review that the necessary level is met (e.g. quality assurance processes, statement of oversight body, sample examinations)

AAE Core Syllabus – Review principles

- The AAE Education Committee will in a similar way check the existence of advanced skills in the national education process that regarding breadth and depths exceeds the basic nine learning areas
- The AAE Education Committee decides whether an associations fulfils the criteria for compliance or not
 - This specifically includes the coverage of practical experience as defined in the AAE Core Syllabus Guidelines

Compliance Check – Current draft

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3	Please list all types of membership											
4				Member type 1	Member type 2	Member type 3	...					
5		The name of membership type		type 1	type 2	type 3						
6		The number of members (approximately)										
7		AAE Core Syllabus required	For new members only									
8			For all members									
9		working experience requirement (yes/no)										
10												
11	Please list all possible ways available to become a member											
12				type 1	type 2	type 3	...					
13		Route to become member	please use the following sheets per topic to indicate coverage	Association only								
14												
15												
16												
17												
18	Details	university programs										
19		(Please list programmes below)										
20												
21												

Compliance Check – Current draft

AAE Core Syllabus										Local Education program									
Topic / Sub-Topic	Learning Objective	Tax.	Topic	Coverage / Learning Objective / Competencies				Tax.	ECTS										
Statistics																			
Random Variables																			
	Explain the concepts of random variable, probability distribution, distribution function, expected value, variance and higher moments.	B2																	
	Calculate expected values and probabilities associated with the distributions of random variables.	B3																	
	Define a probability generating function, a moment generating function, a cumulant generating function and cumulants, derive them in simple cases, and use them to evaluate moments.	B3																	
	Define basic discrete and continuous distributions and be able to apply them.	B3																	
	Explain the concepts of independence, jointly distributed random variables and conditional distributions, and use generating functions to establish the distribution of linear combinations of independent random variables.	B3																	
	Explain and apply the concepts of conditional expectation and compound distribution	B3																	
Statistical Inference																			
	State and apply the central limit theorem.	B3																	
	Explain the concepts of random samoline. statistical	B3																	

ACTUARIAL ASSOCIATION OF EUROPE

Actuarial House

1 Place du Samedi

100 Brussels

Belgium

www.actuary.eu

Follow us on twitter: @InfoAAE