



ACTUARIAL ASSOCIATION OF EUROPE

Challenges in educating future actuaries

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Starting point

The purpose of the AAE is to provide **advice and opinions** to the various organisations of the European Union on actuarial issues in European legislation

The vision of the AAE is for actuaries throughout Europe to be recognised as the **leading quantitative professional advisers** in financial services, risk management and social protection, contributing to the well-being of society

The mission of the AAE is to [...] enhance the development and standing of the actuarial profession in Europe by, inter alia:

- **prescribing educational standards** [...]
- supporting **mutual recognition of actuaries** among member associations

Educational standards – Core Syllabus

AAE member associations must comply with minimum education standards according to AAE Statutes as set out in the AAE's Core Syllabus for Actuarial Training in Europe



Educational standards – Core Syllabus

It is the task of the AAE to define a minimum standard for actuarial education, that is

- accepted continentally



- gives enough flexibility for local specialities

- is fit-for-purpose for future actuaries



- fits the needs of employers of actuaries

- attracts young people to become actuaries



Competencies of future actuaries

Reserving

Pricing

Corporate
Management

Programming

ALM

Regulation

Predictive
Analytics

???

Expert
Judgement

Data and Data
Analysis

Artificial
Intelligence

Risk
Management

AAE Core Syllabus

The current version of the AAE Core Syllabus was accepted in October 2011

The joint document includes guidelines (explain the use and the structure of the syllabus) and the syllabus (explaining the content) itself

Commitment to keep the AAE Core Syllabus under review and to update it as appropriate on a regular basis

AAE Core Syllabus – Structure

Bloom's Taxonomy:

Verbs	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
Objects						
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 – 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 – Content

- 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 – Content

- Statistics
 - 1.1 Random variables
 - 1.2 Statistical inference
 - 1.3 Graduation and statistical tests
 - 1.4 Regression
 - 1.5 Bayesian statistics and credibility theory
 - 1.6 Stochastic processes and time series
 - 1.7 Simulation

AAE Core Syllabus – Content

- Economics
 - 2.1 Macroeconomics
 - 2.2 Microeconomics
 - 2.3 Financial economics
- Finance
 - 3.1 Financial reporting and taxation
 - 3.2 Securities and other forms of corporate finance
 - 3.3 Financial mathematics
 - 3.4 Corporate finance

AAE Core Syllabus – Content

- Financial systems
 - 4.1 Role and structure of financial systems
 - 4.2 Participants in financial systems
 - 4.3 Financial products and benefits
 - 4.4 Factors affecting financial system development and stability

AAE Core Syllabus – Content

- Assets
 - 5.1 Investments and markets
 - 5.2 Asset valuation
 - 5.3 Portfolio management
 - 5.4 Investment strategy and performance measurement

AAE Core Syllabus – Content

- Data and systems
 - 6.1 Data as a resource for problem solving
 - 6.2 Data analysis
 - 6.3 Statistical learning
 - 6.4 Professional and risk management issues
 - 6.5 Visualising data and reporting

AAE Core Syllabus – Content

- Actuarial models
 - 7.1 Principles of actuarial models
 - 7.2 Fundamentals of severity models
 - 7.3 Fundamentals of frequency models
 - 7.4 Fundamentals of aggregate models
 - 7.5 Survival models
 - 7.6 Actuarial applications

AAE Core Syllabus – Content

- Actuarial Risk Management
 - 8.1 The risk environment
 - 8.2 Risk identification
 - 8.3 Risk measurement and modelling
 - 8.4 Risk mitigation and management
 - 8.5 Risk monitoring and communication

AAE Core Syllabus – Content

- Personal and actuarial professional practice
 - 9.1 Effective communications
 - 9.2 Problem solving and decision making
 - 9.3 Professional standards
 - 9.4 Professionalism in practice
 - 9.5 International and institutional awareness of professional standards

AAE Core Syllabus – Content

- Advanced skills:
 - Possible areas of actuarial practice: Life, Pensions, General insurance, Enterprise Risk Management, Investments, Health care, Accounting, Banking, Social security, Reinsurance, Management / Leadership, Data Science
 - Obtained via: Deeper studies, Studies of European and country specific topics, Research, Practical application of actuarial principles

AAE Core Syllabus – Content

- Foundation mathematics:
 - The mentioned learning objectives define a minimum of fundamental mathematical knowledge and skills that should be seen as a prerequisite before starting an actuarial qualification
 - Functions and sets, Differentiation, Integration, Sequences and series, Differential equations, Real and complex numbers, Matrices and systems of linear equations, Vectors and vector spaces and inner product spaces, Probability



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České společnosti

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