SAV SYLLABUS 2013

This Syllabus is identical with the CORE SYLLABUS FOR ACTUARIAL TRAINING IN EUROPE, issued by the Groupe Consultatif Actuariel Europeen and underpins the mutual recognition agreement between the SAV and the Groupe Consultatif.

Implemented by the education Commission of the SAV as per 1 January 2013

GENERAL SKILLS

1. Computing

Aim: To provide a grounding in modern computing methods necessary for the work of an Actuary.

2. Regulation and Legislation and Taxation

Aim: To give students an appreciation of the structures and legislative instruments of Switzerland.

3. Communication Skills

Aim: To develop the ability to present actuarial ideas and arguments both on paper and orally in a manner which will enable them to be understood by non-actuaries.

4. Language Skills

Aim: To enable students to communicate in business discussions and to read actuarial Literature.

GENERIC TECHNICAL SUBJECTS

The subjects at this stage are:

1. Mathematics
2. Probability and Statistics
3. Stochastic Processes and Modelling
4. Economics
5. Accounting and Financial Reports

SAV Geschäftsstelle / c/o Swiss Re / Postfach / 8022 Zürich
ASA Centre Opérationnel / c/o Swiss Re / Boîte postale / 8022 Zurich
Amministrazione ASA / c/o Swiss Re / Casella postale / 8022 Zurigo
T +41 43 285 26 81 / sekretariat@actuaries.ch / www.actuaries.ch

Actuarial students may have studied many of these topics before starting formal actuarial education. In the others, assessment may have been at earlier stages of education.

1. Mathematics
Aim: To provide a grounding in relevant mathematics. (a) Mathematical analysis
(b) Linear algebra
(c) Numerical analysis
(d) Stochastic calculus

2. Probability and Mathematical Statistics
Aim: To provide a grounding in relevant probability and mathematical statistics. (a) Theory of probability and mathematical statistics
(b) Decision theory
(c) Data analysis

ASA Centre Opérationnel, c/o Swiss Re, Boîte postale, 8022 Zurich, Tél. 043 285 26 81, Fax 043 285 47 54
SAV Geschäftsstelle, c/o Swiss Re, Postfach, 8022 Zürich, Tel. 043 285 26 81, Fax 043 285 47 54
Secretariat SAA, c/o Swiss Re, P.O. Box, 8022 Zurich, Tel. 043 285 26 81, Fax 043 285 47 54
E-Mail: sekretariat@actuaries.ch Homepage: www.actuaries.ch

3. Stochastic Processes and Modelling
Aim: To provide a grounding in stochastic processes and modelling methodology. (a) Principles and methods of modelling
(b) Stochastic processes for insurance and finance
(c) Time series modelling
(d) Simulation methods

4. Economics
Aim: To provide a grounding in the fundamental concepts of economics as they affect the operation of insurance and other financial systems.
(a) Macroeconomics
(b) Microeconomics

5. Accounting and Financial Reports
Aim: To provide a grounding in understanding and interpreting the accounts and financial statements of companies and financial institutions.
(a) Accounting principles
(b) Financial structures of business entities

(c) Basic structure of company accounts
(d) Interpretation of business accounts

6. Legislation
Aim: To provide a grounding, understanding and application of the legislation that applies to financial institutions.
(a) Supervisory legislation
(b) Financial services laws

ACTUARIAL TECHNICAL SUBJECTS

The subjects at this stage are:
7. Financial Mathematics
8. Multiple State Modelling
9. Contingencies
10. Risk Mathematics
11. Finance and Financial Markets
12. Quantitative Risk Management and Solvency

7. Financial Mathematics
Aim: To provide a grounding in financial mathematics and their applications to actuarial science.
(a) Theory of deterministic interest
(b) Introduction to contingent claims analysis
(c) Stochastic calculus for finance
(d) Theory of stochastic interest
(e) Asset management

8. Multiple State Modelling
Aim: To provide a grounding in multiple state modelling
(a) Survival models and parameter estimation
(b) Multiple state models and parameter estimation
(c) Construction of a decrement table
(d) Population characteristics and risk classification

9. Contingencies
Aim: To provide a grounding in the mathematical techniques, including stochastic techniques, which are of relevance to actuarial work.
(a) Reserving methodology

(b) Pricing of long term and short term insurance products
(c) Valuation techniques
(d) Analysis of changes in technical results

10. Risk Mathematics
Aim: To provide a grounding in risk mathematics and its use in actuarial work. (a) Distribution of frequency and severity of claims
(b) Risk theory
(c) Credibility theory
(d) Dependencies
(e) Generalised linear models

11. Finance and financial markets
Aim: To provide a grounding in finance, investment and portfolio theory. (a) Financial markets
(b) Pricing and valuation of financial products
(c) Corporate finance
(d) Portfolio theory
(e) Economic value and measurement

12. Quantitative Risk Management and Solvency
Aim: To provide a grounding in the quantitative aspects of risk management
(a) Risk classification
(b) Measuring risk
(c) Diversification
(d) Dynamic financial analysis and internal models
(e) Capital requirements

ACTUARIAL APPLICATIONS

Introduction:
The subjects at this stage are:
13. Actuarial Enterprise Risk Management
14. Professionalism

13. Actuarial Enterprise Risk Management
Aim:
To provide the technical skills to apply the principles and methodologies studied under actuarial technical subjects for the identification, quantification and management of risks. Topics:

• The general operating environment of the enterprise
• Assessment of risks; risk types and risk measures
• Design and pricing of products and/or services
• Determination of assumptions and scenario setting
• Reserving and valuation of liabilities
• Risk mitigation
• Asset Liability Management
• Monitoring the experience and exposure to risk

14. Professionalism
Aim:
To develop an awareness of the meaning of professionalism, the importance of professionalism in the work of an actuary and some of the professionalism issues which may arise in the course of that work.

Topics:
- Conduct standards and discipline
- Professional Standards
- Professionalism and business ethics

SPECIALISATION

Candidates will be required to study at least one of the applications areas in greater depth to gain the full qualification for their association. In this stage student actuaries should demonstrate the ability to develop higher order skills of analysis, synthesis and judgement.

Possible areas of specialisation:
• Life
• Pensions
• General insurance
• ERM
• Investments
• Health care
• Banking
• Social security
• Reinsurance

The specialisation could be one or more of

(a) Deeper studies
(b) Studies of European and country specific topics
(c) Research
(d) Practical application of principlesMuster AG

SAV Geschäftsstelle / c/o Swiss Re / Postfach / 8022 Zürich
ASA Centre Opérationnel / c/o Swiss Re / Boîte postale / 8022 Zurich
Amministrazione ASA / c/o Swiss Re / Casella postale / 8022 Zurigo
T +41 43 285 26 81 / sekretariat@actuaries.ch / www.actuaries.ch

SAV Geschäftsstelle / c/o Swiss Re / Postfach / 8022 Zürich
ASA Centre Opérationnel / c/o Swiss Re / Boîte postale / 8022 Zurich
Amministrazione ASA / c/o Swiss Re / Casella postale / 8022 Zurigo
T +41 43 285 26 81 / sekretariat@actuaries.ch / www.actuaries.ch