Svenska Aktuarieföreningen

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Consultation response to IAA syllabus draft proposal

Swedish Society of Actuaries

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Information

This document constitutes the Swedish Society of Actuaries comments on the syllabus draft proposal. If there are any questions about the comments please contact Anna Flodström (member of IAA Education committee).

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Summary

We very much appreciate the work carried out in the reformulation of the IAA education syllabus by the task force, and see the document as a useful starting point for further discussion. However we are not yet convinced that we can support the proposal in its current form.

It is not clear exactly what is to be expected from Members associations (FMAs), but we are concerned about the level of detail and the practical implications of that detail. We think that the level of detail in the current syllabus is sufficient and it would be better if any changes should be made with reference to that framework. We are also concerned about the lack of a clear focus on insurance. Whilst it is positive that the profession can apply its core competences to other fields, we still need to ensure that we clearly differentiate our qualification from others.

At a more detailed level we question some of the elements where a low level of understanding is required. Essentially if it is important element then it should have a more rigorous requirement, if it is not (and nothing that helps differentiate actuaries from other financial analysts) is it really necessary to include in a "core" syllabus?

Below you will find our more comments, both at a general level and at an individual section level. Our main comments are the five bullet points listed under the section *General comments*.

General comments

Our general comments can be divided into five main categories.

- **It is too detailed.**

  We believe that the syllabus proposal is too detailed. We think that the level of detail in the current syllabus is sufficient and it would be better if any changes should be made with reference to that framework, rather than taking this new, overly detailed approach.

  Whilst we appreciate the attempt to be specific about the requirements, this creates practical difficulties (in particular for smaller associations). There are 259 components set out (with a cognitive and knowledge level defined), and if we are required to analyze every component for every university course available the work load would be very onerous.

  If the Bloom's Taxonomy is kept then we believe that reference to cognitive and knowledge levels could as most serve as guidance and their assessment should not be part of the requirements on member associations.

  For more generic subjects, like Mathematics, Probability and Statistics, we think that it is important that the actuary has general knowledge and skills, while the exact content of the courses is not that important. For example, while skills in simulation and knowledge of hypothesis testing should be required, the special ability to "use simulation to determine the p-value for a hypothesis test" cannot be crucial for becoming a fully qualified actuary (FQA).

- **It lacks a clear focus on insurance.**

  Actuaries are experts in the risks, mathematics and economics of insurance. The techniques can be used in other areas but we must be careful to retain our roots. We believe that the new syllabus takes us too far away from these roots. The fact that the syllabus seems to lack components in the application to insurance and pension business is one reason for this.

  Some examples of areas of application to insurance that should be considered include:

  - semi-markov chains used in disability insurance
  - setting assumptions for biometric risks, expenses and interest rates for pricing, reserving and profit distribution.

We would rather see a syllabus that has a clear focus on insurance.

- **The new subject classification does not help.**

  We do not believe that the new classification is better than the classification in the existing syllabus. For example we do not understand why Statistics (2.8) and Data Analysis (2.3.2) are to different learning areas.

- **We question the level of knowledge required of some elements.**

  We believe that in some cases the new syllabus lacks depth, especially in the areas Probability and Statistics.

  Some of the specified requirements are on such a level that it is not possible to be able to get through the other requirements without that knowledge, and so we cannot see why this needs to be included in the first place. If Bloom's Taxonomy is used we do not see the need for requirements in the lowest levels of understanding.

- **Does the qualification differentiate us from (other) financial analysts?**

  We are concerned that having positioned the qualification as less insurance specific, we might not be differentiating ourselves enough. Has the task force compared this qualification with other qualifications in the financial area?

Comments on individual sections

We give some comments on the details of the proposal below. Note that the reader should not take this as an indication that if these suggestions were followed, the Swedish Society of Actuaries would agree with the proposal. As stated above, we are not yet convinced we could support the proposal.

1. Mathematics

This chapter is far too detailed.

<u>Functions and sets</u>
One could question if set theory is necessary, even though it might help when studying functions and some other items.

The requirement "Explain basic set terminology and apply basic set concepts" is not really required knowledge for an actuary so we would like to see it eliminated. On similar grounds the requirement "Define the supremum and infimum of a set of numbers" should be eliminated.

Probability
We would see probability as belonging to statistics rather than to mathematics.

2. Assets

The "[x %]" seem to be rather arbitrary. From an actuary's perspective investment performance is perhaps not so crucial. It is would be reasonable to put more weight on insurance ALM rather than to know about a lot of different instruments. Otherwise the contents seem to be appropriate, as long as it is possible to include one or two purer finance mathematics courses. From the references made to "RBT" this is not entirely clear. It should be more mathematics or it could be skipped.

For the sections listed below there should be more mathematics and less "explain/describe".

- Investments and markets
- Assets Valuation
- Portfolio management
- Investment strategy and performance measurement

We also think that it should be more focus on ALM from an insurance perspective in the sections "Portfolio management" and "Investment strategy and performance measurement".

3. Data and systems

This section is very diverse spanning from classical statistics courses to computer science. Unless the references made to "RBT" are completely misunderstood, one can question what is expected of an actuary within this section. As an example, references are made to skills which can be interpreted as "pushing a button" in terms of conducting a statistical analysis. This is very unfortunate. One can also question why it isn't sufficient to include the pure statistical and pure data analysis parts in the section called "statistics"?

Data as a resource for problem solving
Why not include this in the "statistics" section? What is the meaning with 2.3.1 bullet point 4?

Data analysis
Why not include this in the "statistics" section and put weight on actually knowing what the described analyses are all about?

We are also of the opinion that "Use Principal Components Analysis to reduce the dimensionality of a complex data set" is a very specific requirement and should be eliminated.

Machine learning
This section should be eliminated. It can't be seen as an important part of an actuary's skills.

Professional and risk management issues
The whole section should be covered in courses on ethics and statistics. More precisely the requirement "Explain the ethical and regulatory issues involved in working with personal data and extremely large data sets" should be handled in the chapter "Personal and professional practice" and could be eliminated here.

Visualizing data and reporting
We rather see it included in the "statistics" section.

4. Economics

Business applications of Microeconomics
The requirement "Explain the role of an entity's growth strategy on its profitability and security" is not necessary so eliminate.

5. Finance

Most of what is described in this section should be covered in standard accounting and mathematical finance courses. One can question why the finance parts are not merged with the section "assets", and for both finance and accounting, these topics could benefit from more focus on the insurance perspective within the learning goals. Regarding the finance parts there should either be more mathematics or it should be eliminated.

Securities and other forms of corporate finance
Perhaps more mathematics or what is the meaning with this element?

For the sections listed below there should be more mathematics and less "explain/describe".

- Financial mathematics
- Corporate finance

6. Financial systems

This chapter is far too detailed and even financial analysts would probably have difficulties to manage this. It is important to simplify.

Participants in financial systems
Could be simplified or included in 2.6.1 alternatively removed.

Factors affecting financial system development and stability
This takes it a step too far and should not be included.

7. Models

Principals of actuarial modeling
We question whether it makes sense to have a general chapter on actuarial modelling. We think the models differ too much between life insurance (biometric risks) and P&C insurance.

It´s too much detail on explanation and description. The difference of short-run and long-run properties is in particular a step too far. The two last bullets on audit trail and communication are also a step too far and more suited to on-the-job training.

Fundamentals of severity models
It should be acknowledged that this and the two following sections are P&C insurance.

Fundamentals of frequency models
The creation of new distributions is rather part of probability/statistics.

Fundamentals of aggregate models
Regarding the requirement "Evaluate the effect of coverage modifications (deductibles, limits and coinsurance) and inflation on aggregate models", the combination of modifications and aggregate models is too specialised to be a requirement.

Survival models
It should be acknowledged that these are life insurance sections.

Actuarial applications:
Survival analysis is repeated with another specification in 2.8.2. One occurrence should be enough, preferably in 2.8.2.

Capital and economic modeling
The requirement "Describe and apply the main concepts underlying the analysis of time series models" seems a bit out-of-place. It is furthermore strange to have this as the sole requirement on time series. They could better be left out as being less important to actuaries.

8. Statistics

Random variables
The requirement "Estimate transition intensities depending on age, exactly or using large sample approximations" is a step too far.

Statistical Inference
Credibility models are a particularity of actuarial models and not part of Statistics in general.

Regression
The requirement "Explain and apply limited fluctuation credibility" is a step too far.

Simulation
The requirement "Use simulation to determine the p-value for a hypothesis test" is a very specialised requirement so please eliminate.

Regarding the requirement "Use the bootstrap method to estimate the mean squared error of an estimator"., again the combination is too specialised so eliminate or require bootstrap and MSE separately.

9. Risk management

This is a description of ERM. We think for the most part it belongs in the CERA qualification rather than in the general actuarial syllabus. But if it is still kept then we have the following comments.

The risk environment
The actuarial Control cycle is included in 2.10.2 and should not be a part of this section.

Risk identification
Keep 2.9.2 bullet point 1 (and maybe 2.9.2 bullet point 4 and 5), the rest could be eliminated.

Risk measurement and modeling
This section should be intergraded into the modelling section.

Risk mitigation and management
Eliminate 2.9.4 bullet point 3, the rest of the section is ok.

Risk monitoring and communication
2.9.5 bullet point 1 takes it a step too far, otherwise it is appropriate.

10. Personal and professional practice

Whilst these components are an important part of an actuaries set of competences, it's not immediately obvious how this should be taught and assessed. It's difficult to see how an association can formally assess that all of these elements have been covered by a candidate.

Effective communications

The requirement "Explain common techniques used to produce effective written and oral communications" is unnecessary so eliminate.

It is possible to combine the requirement "Produce an effective executive summary for an actuarial work product" with the third component "Produce a comprehensive summary of technical actuarial results".

The requirement "Produce a summary of conclusions following completion of a peer review of another actuary's work" is unnecessary so eliminate.

It is possible to combine the requirement "Create a plan to communicate actuarial work results to a relevant audience that could be made up of peers, managers, executives, clients or the public" with the requirement "Deliver an understandable oral presentation with visual aids on an actuarial subject to a non-actuarial audience".

The following requirements are a step too far so we would like to see them eliminated:

- Evaluate whether a particular solution has been effectively communicated to an audience.
- Evaluate whether the uncertainty of a solution has been appropriately communicated.
- Evaluate whether a communication plan was effective in delivery.

Problem solving and decision making

The following requirements are a step too far so we would like to see them eliminated:

- Explain the purpose of a strategy and how it relates to competitive advantage.
- Explain the elements of an effective decision-making.
- Explain how an entity's culture and structure affect decision-making processes.
- Evaluate the effectiveness of a particular decision-making process.
- Explain the benefits of teamwork and time management.
- Use common project management techniques to implement a work plan.

Professional standards

The requirement "Explain the elements of a profession" is not necessary.

Both the requirement "Explain the requirements the profession's standards of practice impose on a work assignment" and the requirement "Explain the structure and governance of the student's actuarial association" are not relevant for all associations.

Professionalism in practice

"Explain the need to use peer review and checking of work" is not universal and should be eliminated.

Both the requirement "Describe how to monitor changes to professional standards and standards of practice" and the requirement "Evaluate the effectiveness of a personal professional development plan" are not relevant for all associations and should be eliminated.

The requirement "Produce a continuing professional development plan to ensure actuarial skills are maintained and developed" is not an IAA requirement and should be eliminated.

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