



2017 IAA EDUCATION GUIDELINES

1. An IAA Education Syllabus and Guidelines were approved by the International Forum of Actuarial Associations (IFAA) in June 1998, prior to the creation of the IAA. This version of the Guidelines and an updated Syllabus were approved by Council in May 2022 and replace the 2017 updated documents.
2. As part of the full membership requirements of the IAA, associations must have education requirements for at least one class of membership which are based on the IAA Syllabus and compliant with these Education Guidelines that define an overall minimum level of breadth and depth of such education requirements). The objective is that all students will have completed a compliant education syllabus on becoming member of the designated class of membership(s).

Framework

3. All associations are asked to ensure that all members of at least one class of membership are admitted through education processes that meet the Education Syllabus and Guidelines. The IAA through the Education Committee would be pleased to work with associations to help them achieve compliance with the IAA Education Syllabus and Guidelines. The Secretariat can arrange contact with the Education Committee.
4. Cross recognition of qualifications is an association decision. Compliance by an association with the IAA Education Syllabus and Guidelines will not by itself achieve cross recognition of qualifications.
5. The criteria for being a member of a class of membership of an IAA Full Member Association are defined by the association; however, members belonging to the designated class of membership(s) who began their studies after the date the association became a Full Member of the IAA must have completed a set of education requirements that satisfy the IAA Education Syllabus and Guidelines. The requirements may be those in force at the time the member started their studies or any later version.

Mathematical Background

6. The mathematical foundation for anyone entering the actuarial profession is very important, as many topics require a deep knowledge of a number of mathematical techniques. The Appendix to the Syllabus lists an example of the mathematical background expected for those commencing actuarial studies. However, more in-depth mathematical studies are implicit in the requirement to demonstrate an understanding of the models and techniques covered by the Syllabus and may be necessary in structuring an actuarial program.

Variations in Education and Qualification

7. The IAA Education Syllabus and Guidelines do not prescribe an education process, leaving this to each association. There are many effective actuarial education and qualification programs which vary from organization to organization and country to country. Some of the important differences are the following:
 - a. **Education basis** - University courses v. self-study with professional examinations.
 - b. **Education source** - Own system in association or use of the system in another association.
 - c. **Training source** - Own organization training v. use of other organization training.
 - d. **Control of educational content and qualification standards** - by the actuarial organization, by universities or by government.
 - e. **Qualification basis** - Examination scores v. university grades.
 - f. **Mathematics / Business Orientation** - Proportion of education on mathematics v. business topics, e.g. accounting, law, regulation, marketing.
 - g. **Specialization** - Limited (or no) specialty differentiation v. extensive specialty tracks or separate specialty organizations.
 - h. **Qualification standards** - One qualification standard for all actuaries (set by the actuarial organization or government) v. separate qualification standards by area of practice.
 - i. **National actuarial structures** - One organization per country v. multiple organizations per country.
 - j. **Diversity of markets for actuaries** - Relative size of market for life insurance, pension, health care, general insurance and other areas of actuarial practice and service.
 - k. **Geographic scope** - Serve one country, several countries or many countries.
8. Nonetheless, there is a high degree of commonality among the education systems for actuaries, and the IAA Education Syllabus and Guidelines have been developed for use as described in the sections below.

Criteria for Meeting Guidelines

Breadth

9. The Syllabus has 9 Subjects (numbered 1 through 9 in the Syllabus). Each Subject contains three to six Major Topics (numbered 1.1, 1.2, etc.) and a number of Sub-Topics (numbered 1.1.1, 1.1.2, etc). 6 of the Subjects are designated as Core subjects and 3 Subjects are designated as Elective subjects. The following criteria are set to ensure appropriate coverage:
 - a. All Major Topics in all Core Subjects in the Syllabus must be covered, however every sub-topic need not be covered. The minimum coverage threshold for Core subject sub-topics is 80%.
 - b. Elective subjects may be substituted with other topics at the Association's discretion with the understanding that the breadth and depth of the Association's syllabus is at least equivalent to the IAA 2017 Education syllabus.
 - c. Subjects/Main Topics/Sub-Topics do not need to be grouped or packaged in the same manner as in the Syllabus.

- d. Some Subjects may be required by an association to be taken as pre-study or pre-requisite to actuarial study.
- e. The Subjects need not be treated as being of equal weight when prescribing a full qualification process.
- f. It is important that students are introduced to all the Major Topics in the Core subjects of the Syllabus, but some Elective subjects and/or Sub-Topics of Core subjects may be omitted or deemphasized provided that breadth in other topics and/or Subjects exceeds the Syllabus. The resulting education system should be at least as broad as the Syllabus.
- g. Different associations will give more or less weight to the various Main Topics/Sub-Topics within each Subject based on the needs for actuaries in the markets that each association services.

Depth

10. The following criteria are set to ensure appropriate depth of coverage:
 - a. Each subject should be covered to a depth whereby the student has a good knowledge of the subject as defined in the Syllabus and an understanding of how the subject is used in problem solving so that the student is able to solve well-defined problems that actuaries may encounter in their work. This is level 2 on the scale below. Some subjects may be covered in more depth.
 - b. In assessing depth associations should consider a four point scale for the treatment of each subject:
 - 0 – Not covered at all,
 - 1 – An introduction to the topics/sub-topics so the student has a basic knowledge of the subject,
 - 2 – The student has a good knowledge of the subject as defined in the Syllabus and an understanding of how the subject is used in problem solving so that the student is able to solve well-defined problems that actuaries may encounter in their work,
 - 3 – The student has a deep knowledge of the subject and is able to solve complex problems using judgement.
 - c. It will be appreciated that there is another point of depth on the scale whereby an experienced practitioner with a specialization in the subject is able to solve ill-defined complex problems using judgement. However, this depth is unlikely to be achieved at the point when an individual initially qualifies as this is acquired with experience.
 - d. In assessing the depth of coverage of any one subject there may be some averaging across all topics/sub-topics as depth of treatment of different topics/sub-topics within that subject may vary. An indication of the recommended depth of each sub-topic is set out with reference to the Bloom's Taxonomy (see Appendix).
11. As a guide to the required depth, in many countries, the IAA Education Syllabus and Guidelines depth would be achieved by a combination of university courses, typically covered over 3 or more years of full time study. For FMAs whose education programme is assessed primarily through examinations rather than university coursework the total number of expected study hours is between 4,000 to 6,000 hours. An education programme that falls far short of these sample benchmarks is unlikely to meet the required depth of coverage.

Purposes of IAA Education Syllabus and Guidelines

12. The IAA believes that this document will:
 - a. Assist a new actuarial association in establishing its education system and requirements.
 - b. Assist an actuarial association in reviewing its education system and requirements.
 - c. Assist an actuarial association in evaluating recognition for the training of members of other organizations.
 - d. Assist the IAA in evaluating the education requirements of current or prospective IAA members.
 - e. Assist a university in establishing or reviewing its actuarial courses.
13. It is intended that the IAA Education Syllabus and Guidelines will serve to improve the international portability of actuaries, actuarial graduates and actuarial students and to improve the international recognition of the actuarial profession.
14. The IAA Education Syllabus and Guidelines are not intended to prescribe an education process and this decision is left to each individual actuarial association. However, each association must demonstrate that its education requirements for admitting members to at least one class of membership satisfy these IAA Education Syllabus and Guidelines in the way defined in the internal regulations.

Recognition by Associations of Other Associations' Education System

15. Some associations may choose to use the education system of one or more associations whose education requirements satisfy the IAA Education Syllabus and Guidelines.
16. The IAA Education Syllabus and Guidelines may be used to assist associations in decision making on cross recognition of qualifications.
17. The IAA Education Syllabus and Guidelines do not address the qualification standard appropriate to practice in particular specialty areas of locations.

Important Considerations

18. The Guidelines do not prescribe either delivery or assessment methods.
19. The structure of an education system (whether involving universities, other educational institutions or professional examinations) need not follow the order shown in the Syllabus. Subjects may be arranged and material from various Main Topics/Sub-Topics within each Subject may be combined in examinations or courses as appropriate.
20. Personal and Actuarial Professional Practice is one of the Subjects in the Syllabus and it is important that associations consider their treatment of this even if for most of the education process they use the system of another association or a university. Associations need to develop a solution that is not theoretical but practical and which has regard to local needs and conditions.

21. Because of the wide variety of situations from jurisdiction to jurisdiction, the IAA Education Syllabus and Guidelines do not address the extent of additional education that might be required to change practice from one jurisdiction to another or from one practice area to another within a jurisdiction.

Appendix - Bloom's Taxonomy

The IAA Education Syllabus illustrates the depth of knowledge and application by using the Model of Learning Objectives created by Rex Heer, Iowa State University. This Model is based on Bloom's Taxonomy of Education Objectives (1956) and Anderson and Krathwohl's 2001 revision.

The Model of Learning Objectives uses both a knowledge dimension and a cognitive process dimension as demonstrated in the table below.

Revised Bloom's Taxonomy (RBT)
Cognitive Process Dimension

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

Adopting this Model of Learning Objectives accommodates defining both the areas of learning achievement expected of future actuaries and also the specific level and type of knowledge suggested. This framework is widely used and provides associations a way of linking the learning objectives with appropriate learning activities and assessments.

The model uses four types of knowledge – Factual, Conceptual, Procedural and Metacognitive – and six cognitive processes – Remember, Understand, Apply, Analyze, Evaluate and Create.

1. **Factual knowledge** generally involves terminology associated with actuarial work and specific details with respect to financial security systems, actuarial models, actuarial methods and the external forces important to actuarial work. Factual knowledge also includes specific details with respect to membership in the actuarial profession.
2. **Conceptual knowledge** generally involves the interrelationships among current or potential future financial security systems, common actuarial models, common actuarial methods, external forces and the actuary.
3. **Procedural knowledge** involves how an actuary actually does something. To demonstrate Procedural Knowledge often requires both Factual and Conceptual knowledge. Many practical skills require Procedural knowledge.

4. **Metacognitive knowledge** involves an actuary's awareness of his/her strengths and weaknesses, including when the actuary is not qualified to do specific work. This knowledge will also include an actuary's awareness of personal learning needs and a lifetime learning strategy. Some normative skills involve acquiring Metacognitive knowledge (e.g. self-knowledge).

The six categories of the cognitive process include nineteen specific cognitive processes that clarify the scope of the six categories. There is a natural order for cognitive processes from the lowest order thinking skills "Remember", through "Understand", "Apply", "Analyze" and "Evaluate" to the highest cognitive order "Create". The order does not mean to imply difficulty in succeeding at the cognitive level but rather that the lower cognitive process will be subsumed by another higher cognitive process. For example, you would often need to "Remember" to "Create".

A suggested Bloom's Taxonomy category is included in the 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.