

The Future of Actuarial Education and Training - facing the new challenges



Hungarian Actuarial Society, 23 May 2008

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INTERNATIONAL ACTUARIAL ASSOCIATION (IAA)

Core Syllabus and Guidelines

- > IAA has adopted core syllabus and guidelines...
- > ...as a fundamental requirement for Full Member status
- > all associations have to be tested against requirement
- > to become Full Member Associations of the IAA
- > Full Member Associations may require more but not less!
- > revised syllabus was approved by IAA Council in April 2007



IAA CORE SYLLABUS

Ten subject areas

- > financial mathematics
- > probability and mathematical statistics
- > economics
- > accounting
- > modelling
- > statistical methods
- > actuarial mathematics
- > investment and asset analysis
- > actuarial risk management
- > professionalism



IAA CORE SYLLABUS

Principal changes in April 2007

- > financial mathematics (updated and modernised)
- > probability and mathematical statistics (no change)
- > economics (no change)
- > accounting (no change)
- > modelling (expanded)
- > statistical methods (expanded)
- > actuarial mathematics (completely rewritten and expanded)
- > investment and asset analysis (expanded and new title)
- > actuarial risk management (rewritten and new title)
- > professionalism (greatly expanded)



IAA CORE SYLLABUS

Principal changes in April 2007

- > **financial mathematics (updated and modernised)**
 - > deterministic theory of interest rates
 - > generalised cash-flow models
 - > introduction to contingent claims analysis
 - > term structure of interest models
 - > risk neutral valuation
 - > stochastic calculus of finance
 - > stochastic theory of interest
 - > dynamic portfolio management
 - > introductory applications to insurance and financial liabilities



IAA CORE SYLLABUS

Principal changes in April 2007

- > **actuarial mathematics (completely rewritten and expanded)**
 - > nature of events giving rise to a contingency
 - > typical solutions offered by insurance, social insurance, etc
 - > actuarial methods for evaluating the prospective cost of solutions
 - > actuarial methods for monitoring the results and maintaining financial stability, such as:
 - > reserving
 - > financial reporting
 - > reinsuring
 - > profitability analysis
 - > financial condition analysis



IAA CORE SYLLABUS

Principal changes in April 2007

- > **actuarial risk management (rewritten and new title)**
 - > risk types and risk measures
 - > management of risks and methods of reducing exposure
 - > monitoring the experience and exposure to risk
 - > management of the relationships between assets and liabilities
 - > profitability of the enterprise and management of capital
 - > principles of regulation of financial institutions



IAA CORE SYLLABUS

Principal changes in April 2007

- > **professionalism (greatly expanded)**
 - > characteristics and standards of a profession, including need for:
 - > specialised skill and education
 - > ongoing training and development
 - > high quality of advice
 - > exercise of independent judgement
 - > objectivity, integrity and accountability
 - > code of conduct
 - > discipline process
 - > practice standards set by actuarial bodies or other stakeholders
 - > regulatory roles of actuaries
 - > the professional role of the actuary



IAA CORE SYLLABUS

Principal changes in April 2007

- > **professionalism education**
 - > ensuring that each actuary has an understanding of the duties of a professional
 - > understanding of ethical obligations
 - > understanding of obligations to users of actuarial work products
 - > understanding of obligations to a broader public

- > needs practical examples and case studies
- > many issues are not black and white and require discussion
- > actuaries need to understand how to develop a professional attitude and approach to analysing situations



FACING THE CHALLENGES OF THE FUTURE

Will the core syllabus have to change further?

- > New challenges include:
 - > Solvency II
 - > internal models
 - > stochastic modelling
 - > individual capital assessment
 - > fair value accounting
 - > enterprise risk management
 - > assessment of contingent liabilities
 - > reformed pension systems
 - > new risk-sharing mechanisms in retirement
 - > optimising investment strategies for individual account savings



FACING THE CHALLENGES OF THE FUTURE

Will the core syllabus have to change further?

- > Solvency II
 - > importance of modelling skills
 - > sophisticated techniques for analysing tails of distributions
 - > stochastic modelling – importance of correlations between risks
 - > evaluation of new types of risk (e.g. operational risk)
- > new financial reporting standards
 - > replicating portfolios
 - > use of ever more complex financial instruments
 - > development of cash flow modelling approaches
 - > discounting using term structure and swap rates



FACING THE CHALLENGES OF THE FUTURE

Will the core syllabus have to change further?

- > much of the material is already covered by the syllabus
- > ..but interpretation of the syllabus may need to change
- > strengthened already with these developments in mind:
 - > Financial Mathematics
 - > Modelling
 - > Actuarial Mathematics
 - > Actuarial Risk Management
- > however, core syllabus will need to evolve continuously
- > and core syllabus cannot include everything!
- > many actuaries will need to go well beyond the core



FACING THE CHALLENGES OF THE FUTURE

Will existing actuaries need to upgrade their skills?

- > in most cases, yes!
- > many of the topics now included in the syllabus are new
- > 'old' actuaries need to keep themselves up-to-date
- > particular challenge with key changes taking place
 - > insurance regulation
 - > insurance accounting
- > enormous opportunities for actuaries
- > ...but need to demonstrate that we can grasp them firmly
- > CPD is vitally important to meet the challenges



INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

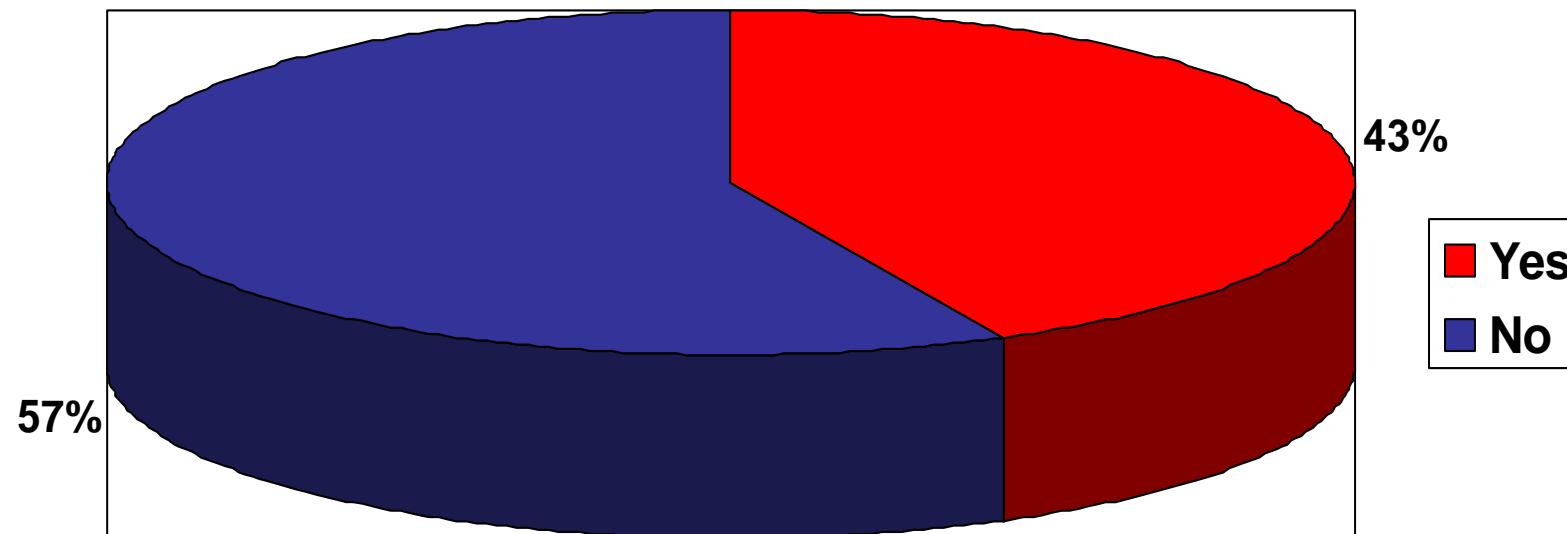
IAA plans to develop actuarial education programme

- > based on IAA education syllabus and guidelines
- > to be available in all countries
- > Associations may use IAEP to demonstrate that they meet the IAA education syllabus and guidelines
- > they may use IAEP in full or in part
- > individuals who have passed all of IAEP can be regarded as meeting minimum requirements
- > IAA will not award membership or qualification
- > key role for IAA Full Member Associations



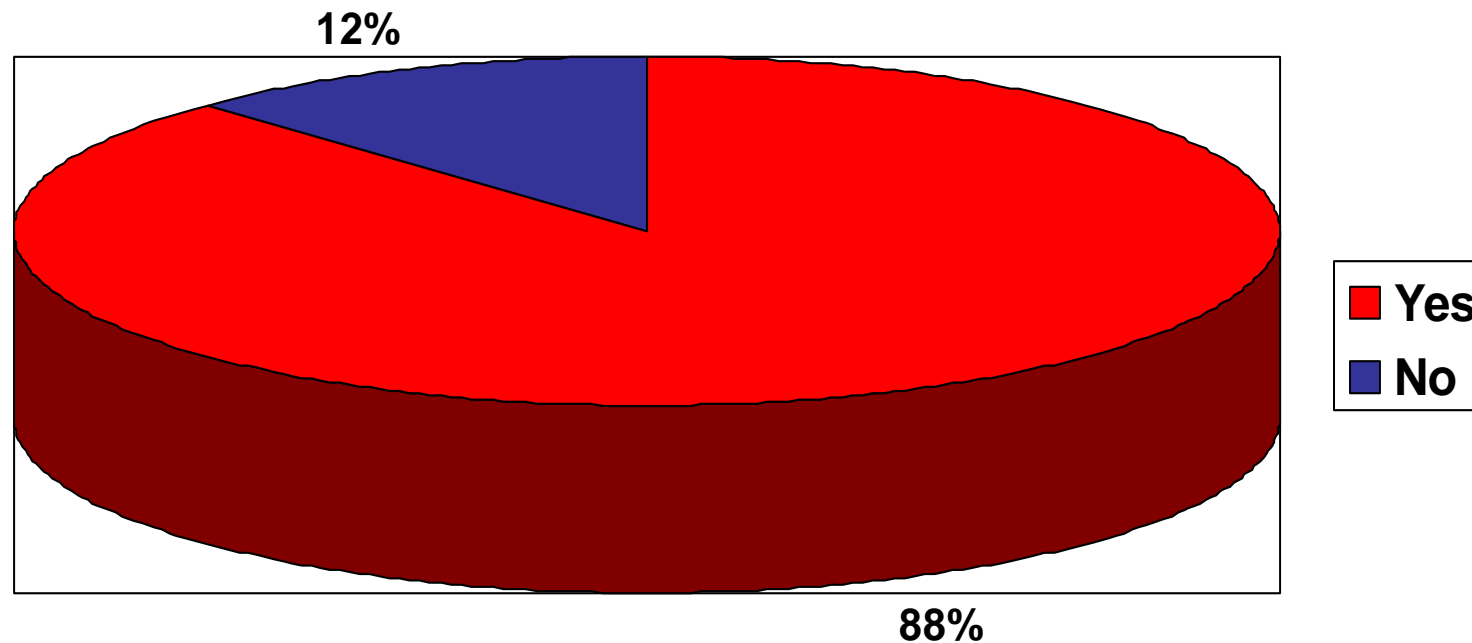
INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Does your association organize actuarial education/examinations?
(by number of associations)



INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Does your association organize actuarial education/examinations?
(by number of students)



PROFESSIONAL EXAMINATION SYSTEMS

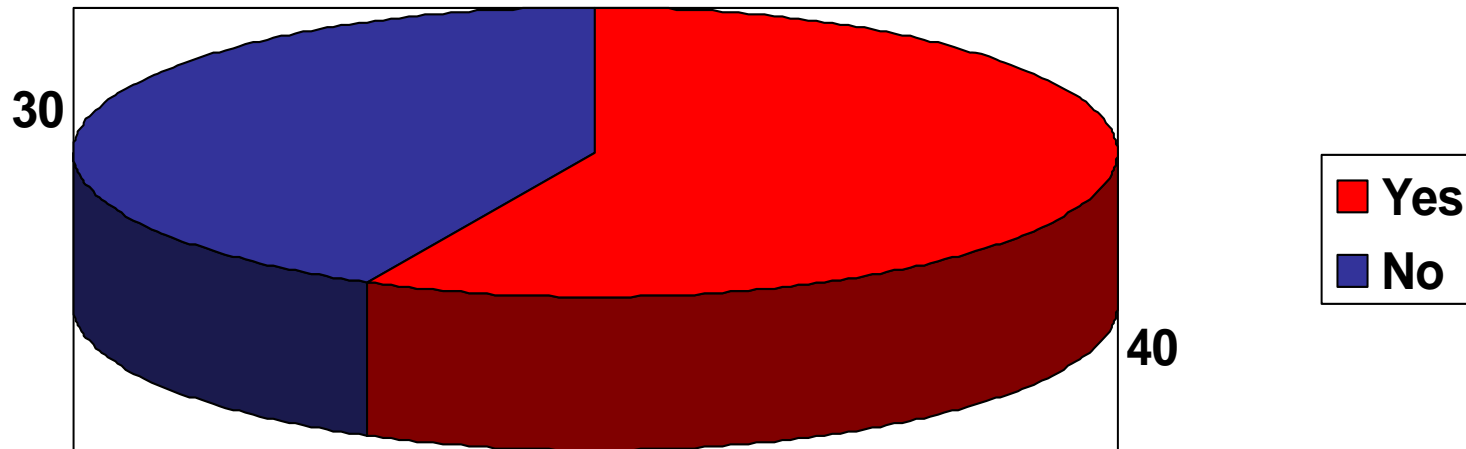
Students currently under professional examination systems

Association	Number of students a year
Society of Actuaries	10,000
UK Actuarial Profession	8,000
China	4,000
India	4,000
Casualty Actuarial Society	3,000
Japan	2,300
South Korea	2,000
Germany	1,700
Australia	500
Brazil	400
Russia	200
Philippines	100
Indonesia	100
TOTAL	36,300



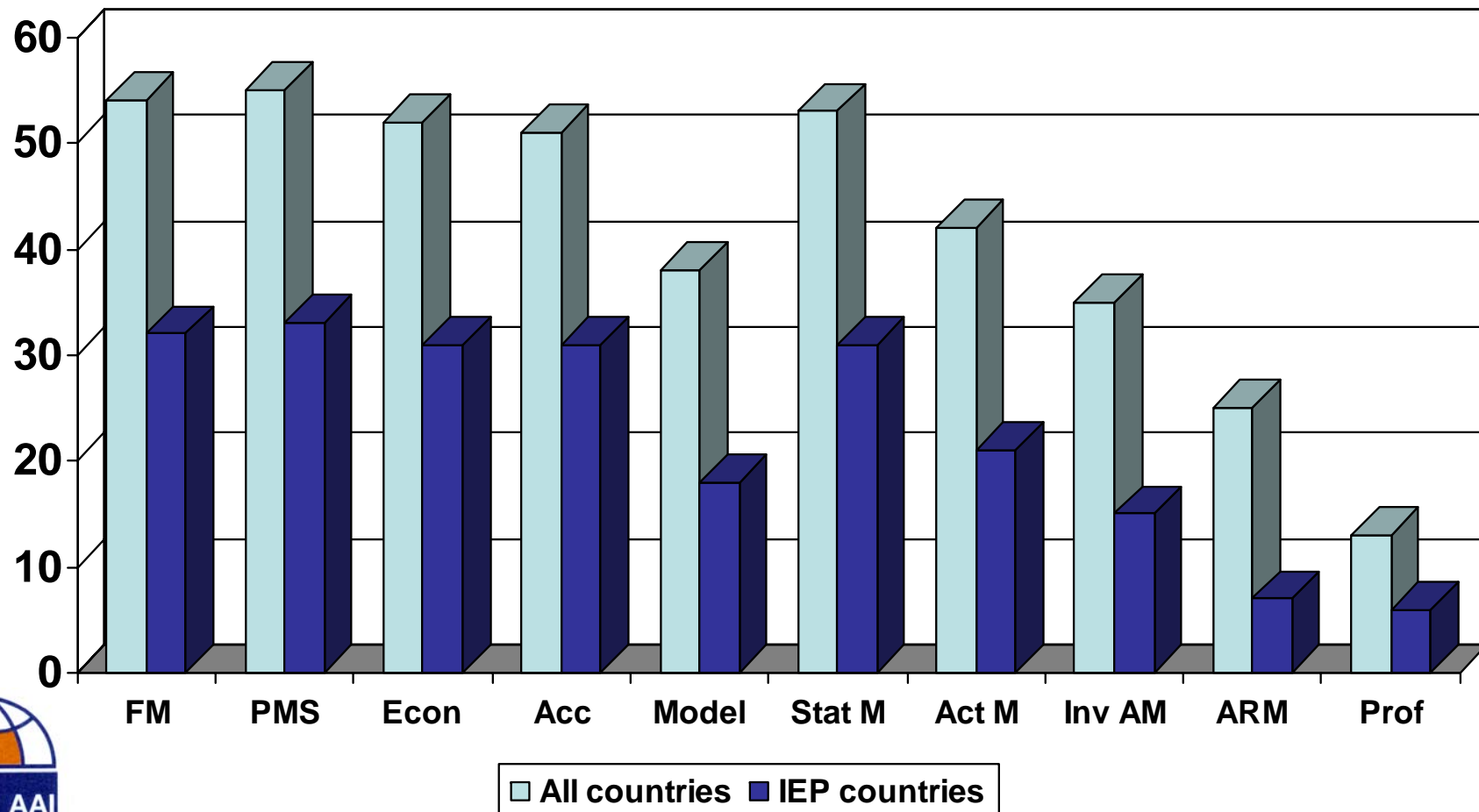
UNIVERSITY INVOLVEMENT

Does your association currently rely, at least in part, on education provided by universities?



UNIVERSITY INVOLVEMENT

Countries with universities interested in teaching IAA core syllabus



UNIVERSITY INVOLVEMENT

Possible levels of accreditation

> Level 1

- > Financial Mathematics
- > Probability & Mathematical Statistics
- > Economics
- > Accounting

> Level 2: Above subjects plus

- > Statistical Methods
- > Actuarial Mathematics
- > Modelling

> Level 3: Above subjects plus

- > Investment and Asset Management
- > Actuarial Risk Management

> Accreditation to teach and/or examine



INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Role of IAEP

- > Specification of core syllabus and curriculum
- > Preparation and promulgation of tuition materials
- > Accreditation of universities at different levels
- > Set, administer and mark examinations in key subjects eg:
 - > Statistical Methods
 - > Actuarial Mathematics
 - > Investment and Asset Management
 - > Actuarial Risk Management
- > Design generic professionalism training and...
- > ...assist local associations to run professionalism courses



INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Specification of core syllabus and curriculum

- > New core syllabus and guidelines approved April 2007
- > Develop more detailed curriculum for meeting syllabus
- > Specify reading materials suitable for curriculum
 - > for most subjects there will be a number of alternatives
 - > selected reading will give an indication of depth as well as breadth
- > Identify where new tuition materials might be needed



INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Preparation and promulgation of tuition materials

- > Plan programme of new tuition materials
- > Commission authors for each subject or part of subject
- > Monitor and peer review preparation of materials
- > Edit and prepare for publication (electronic and paper)
- > Commission on-line distance-learning modules
- > Implement on-line distance-learning programme



INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Accreditation of universities

- > Determine requirements for accreditation
 - > syllabus coverage
 - > teaching staff
 - > teaching methods
 - > examination processes
 - > examination standards
 - > involvement of actuaries
 - > relationship with local association
- > Review whether requirements are met and accredit
- > Monitor and regularly review accreditation status
- > Develop 'training the training' and visiting lecturers



INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Role of IAEP

- > Specification of core syllabus and curriculum
- > Preparation and promulgation of tuition materials
- > Accreditation of universities at Levels 1, 2A, 2B, 3A, 3B
- > **Set, administer and mark examinations in key subjects:**
 - > Statistical Methods
 - > Actuarial Mathematics
 - > Investment and Asset Management
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INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Set, administer and mark examinations in key subjects

- > Subcontract setting and marking of each examination
 - > to a university
 - > to an existing actuarial examining body
 - > to an actuarial association or actuarial educational institute
- > Subcontract administration of each examination...
- > ...or all examinations together
 - > to locate and supervise examination centres
 - > to organise registration for examinations
 - > to organise logistics of getting papers to centre
 - > to maintain confidentiality and security of papers
 - > to ensure high standards of invigilation
 - > to collect papers and deliver them to markers



INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Role of IAEP

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- > Set, administer and mark examinations in key subjects:
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INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Design and delivery of professionalism training

- > Design generic professionalism course
- > ...with wide selection of case studies
- > ...powerpoint presentations
- > ...notes for presenters and notes for participants
- > ...devise role-plays and/or produce video
- > Make available course leaders to assist associations to run course for the first time and train local course leaders



INTERNATIONAL ACTUARIAL EDUCATION PROGRAMME

Other possibilities

- > **diploma courses** to kick start professional education
- > other **short courses** to supplement local universities
- > development of **CPD modules** in more advanced topics
 - > International Financial Reporting Standards for actuaries
 - > actuarial role in Solvency II and IAIS equivalent
 - > reserving and pricing for general (P/C) insurance
 - > internal models
 - > fair value for insurance companies
 - > actuarial role in pension reform and private pension plans
 - > actuarial role in social security schemes
 - > actuarial role in health care financing
- > **develop generic materials + team of specialist presenters**



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- facing the new challenges



Training the actuaries of the future for a global profession
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