



SOCIETY OF ACTUARIES

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## Society Syllabus

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and statisticians because of lack of development of our statistical skills. Though there may be truth to these fears, the question remains—Will the penetration of advanced statistical theory throughout the Associateship syllabus make us better able to serve our various publics? Or will it tend to attract theoreticians into our system with little appreciation of the actuary's traditional role in a real-life business environment? . . .

To illustrate one major aspect of these changes, let me tell you about a new text approved for the 1983 syllabus, *Survival Models and Data Analysis*. . . (It was represented by the Society Office as a "state of the art" textbook in demography. It is nothing of the sort. Clear evidence is found in one sentence of its introductory chapter, "We do not study . . . the general province of demography". . . A few minutes with the text makes it clear that its mathematical level exceeds that of any text which has ever appeared on the syllabus. . . .

### Actuaries' Views

As one who has registered lack of approval with recent developments, I have outlined my concerns, a primary one being that practicing actuaries as a group, rightly or wrongly, are not evolving in an increasingly mathematical direction. My request of the Society was a simple one—Don't accept my opinions, but try to find out, from a questionnaire to a random sample or even all of the membership, whether or not the direction of actuarial education is following the desirable course. I feel reasonably sure that this was not seriously considered.

After the proposals were approved, I belatedly sent my own questionnaire, about 100 forms randomly distributed to Associates and Fellows who had studied at Georgia State or had participated in one or more of our seminars. These recipients were spread over 25 states; about 60% had never taken a course for credit at Georgia State. . . . Not only were there 86 responses but many contained handwritten comments. Many expressed frustration with what they perceived as lack of realism by the Society.

The E & E Committee's justification for the sharp change in direction has been that the syllabus has become seriously deficient, as has the actuary's ability to

handle practical problems without the benefit of the latest statistical techniques. Asked to comment, five respondents agreed, a dozen failed to answer definitively, the rest disagreed with the statement wholly, some couching their disagreement in explicit terms.

Respondents were asked to comment on the extent to which the Associateship syllabus of 1982 and earlier had prepared them for the mathematical demands of their careers. Two indicated reservations because of insufficient statistical content; two answered negatively without elaboration; all others expressed complete satisfaction, twenty volunteering that they felt over-prepared.

Another question asked about respondents' most recent opportunity to use a non-trivial statistical technique in their work. Over 60% simply answered "never"; ten said it was so many years ago that they had forgotten; fifteen had done statistical work in the past year, but the topics included calculating a correlation coefficient, fitting a least squares curve, and determination of a 99% confidence interval. Only eight reported ever having undertaken a truly statistical application. . . .

Asked which Associateship subjects had been most useful in their careers, 72 mentioned life contingencies while 60 mentioned compound interest theory. Probability, numerical analysis, and graduation were next, but far down the list with a dozen responses each; statistics was mentioned three times. As least useful subjects, demography led with 38 votes. Statistics and risk theory finished second and third with 31 and 23 mentions.

What, if anything can be concluded from these responses? Are they significant? Indeed, is it proper to base syllabus development on opinions and experiences of a sample of practitioners? The General Officers have in effect responded negatively. I agree that many of us are not as aware as we should be of new tools that may be of great value in specific cases, but I submit that the E & E Committee's response is too severe and leaves little continuity between the present and recent past.

### Syllabus Revision Principles

Evolutionary revision of the syllabus is appropriate once it has been demonstrated that practitioners are making widespread use of statistical techniques,

but the current extension to such heavy statistical content flies in the face of perceived needs. . . . Creation of an optional specialty exam covering advanced statistical techniques for types so inclined, would be a major step in the right direction. But frontiers of knowledge in all facets of our profession have developed too rapidly for all actuaries to become highly specialized mathematicians at the expense of much more practical topics. Foundation knowledge, after all, is the essence of education. Several of my respondents volunteered the comment that, as statistical or other specialized knowledge becomes necessary in their work, it is obtainable through their own initiative.

. . . .  
85% of my respondents felt strongly that the actuary is primarily a businessman, not a mathematician working in a business environment. Written justifications of the Society's position pay lip service to this philosophy, but its actions are not consistent with that line of thought. □

## RESPONSE OF THE EDUCATION AND EXAMINATION COMMITTEE

by Michael J. Cowell  
1981-82 General Chairman

Professor Batten challenges the wisdom of current trends in the Society's educational program, particularly introduction of advanced statistical methods in the Associateship syllabus. He criticizes the Education Policy Committee for relying too heavily on academicians; as a result, he contends, the syllabus changes don't properly reflect the needs of practicing actuaries.

### Why These Syllabus Changes?

We consider the changes in the syllabus' mathematical content to be evolutionary rather than revolutionary. For the most part, those in Parts 3, 4 and 5 are more in approach than content; they introduce analytical and computational tools that enable the actuary to evaluate contingencies from a risk-theoretic approach as well as in the traditional deterministic fashion. Experience has shown that students adapt readily to this; we see no evidence that it attracts theoreticians with little appreciation of the actuary's traditional role. Quite to the contrary, an understanding of modern analytical techniques will equip tomorrow's actuaries even better than their prede-

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**Response***(Continued from page 3)*

cessors to apply their crafts in the service of their publics.

The need for such changes was recognized by our profession's leaders as far back as the late 1960's; the rapid application of computers to actuarial practice in the 1970's heightened many practitioners' concern that their own backgrounds in statistical techniques were inadequate for applying actuarial theory to its full potential. Prof. Batten contends that frontiers of knowledge have expanded too rapidly for actuaries to become highly specialized in applying new techniques; he believes that as practicing actuaries need such knowledge, they will obtain it on their own initiative. We agree, but believe that actuaries will be better equipped to recognize the potentials if their education has familiarized them with a broad range of techniques.

The effectiveness of statistical tools in solving practical business problems has become widely recognized. Accountants, demographers and economists are working in what has been our profession's domain—not because they are more skilled in mathematics but because their education is alerting them to the available techniques and in when to use them.

To maintain its leadership, our profession must educate beyond the immediate requirements of today's problems. Our syllabus must reflect at least the same facility with basic statistics as that in a typical MBA program. To the extent that such techniques aren't being widely used by today's actuaries, the message may be that students haven't learned how to use these tools, rather than that such methods aren't useful.

It's true that the text, *Survival Models and Data Analysis*, approaches its subject in a different way than did previous readings on demography. But surely this new text offers broader perspective of demographic techniques than prior references did, and its mathematical requirements are well within what we expect of our students in the earlier Associateship examinations.

**How Representative Is The E & E Committee Viewpoint?**

Participation of Society members on the E&E committees is indeed extensive. Almost 350 of today's Fellows—nearly

one in fourteen—serve on one or more of them, and several hundred more have such service behind them. They form a broad cross-section of representation from large companies and small, stock and mutual, pension consultants and insurance consultants, the public sector, academia, Canada and the U.S.A. The Education Policy Committee itself includes both pension and insurance consultants, and for the past two years was chaired by a pension consultant. Consultants occupy leadership positions on the Education Committee, the Examination Part Committees, and fill three of the twelve General Officer positions on the E&E Committee. A pension consultant chairs the Task Force on Contingency Theory. And the entire Society membership has been invited to share in Task Force work, and is kept informed of the Task Force recommendations, e.g., through articles in this newsletter.

It's true that actuaries from the academic community have had a more than proportionate representation on groups examining the mathematical content of the Associateship syllabus. This has been necessary because they are so well informed on the subject matter and, by their knowledge of trends in college mathematics curricula, are best able to advise on students' ability to tackle the Associateship syllabus. Several of our academic representatives are themselves practicing actuaries through their own consulting practices.

**Educating Actuaries For Tomorrow**

In his 1981 address to the Society on "Models in Insurance", Prof. William S. Jewell emphasized the need for evolution in our educational process, and urged us to be receptive to new approaches in terms of their potential utility to actuaries. In describing the Society's strategy for actuarial education, the E&E Committee defined the actuary's role as that of measuring, managing and communicating the impact of contingent events on the future of financial security programs. We believe that the syllabus changes now being implemented are appropriate to the challenges that will face tomorrow's actuaries. □

**Deaths**

Charles R. Arthur, A.S.A. 1934  
Louis O. Shudde, F.S.A. 1927

**Letters***(Continued from page 2)***Changing Education**

Sir:

Robert W. Batten's contention that our Education Committee has sometimes gone too far, too fast, warrants careful consideration. There have, though, been some worthy as well as some ill-considered changes.

(1) The recent new Part 10 study note, Actuarial Review of Reserves, in which stratified sampling and lessening the variance in spot checks are described, seems a sound case of putting Associateship mathematics to use on a Fellowship topic.

(2) The problems of coping with ever-changing hardware and software have caused the Committee to shun Computers, thus allowing numerical analysis in our syllabus to drift further and further out of date. But acceptance in October 1982 of the Burton, Faeris and Reynolds text, which deals extensively with computer concepts but avoids wandering into procedural matters, seems a major advance.

(3) Whenever a new text is commissioned, it usually runs behind schedule, sometimes by a year or two. Under the resulting time pressure it is easy to make two mistakes. First, replacing an old book with one that is conceptually better but suffers from defects in several minor areas. Second, replacing with one that is well written for the expert reader but that serves students poorly.

I hope that Robert Batten's criticisms will make us all more aware of what is going on.

William H. Aitken

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**Actuarial Success**

Sir:

Further to Stephen C. Frechtling's comment (Dec. issue) about the 33% of those receiving credit for Part 1 in 1970 who had become FSA's or ASA's by Spring 1981: some of that class of 1970 became FCAS's or ACAS's, myself included.

CAS members would therefore seem to count as failures, in a Bernoulli trial sense, of course!

Jerome E. Tuttle, FCAS

*Ed. Note: The mistake was ours, not Mr. Frechtling's. Having learned our lesson we are working with the Casualty Society on our next study of student achievement.* □