



SOCIETY OF ACTUARIES

Article from:

# The Actuary

April 1995 – Volume 29, No. 4

# Continuing Ed harnesses technology

by Linda Heacox  
SOA Public Relations Specialist

**K**ing Solomon wrote, "There is nothing new under the sun." Beleaguered participants in the computer revolution, however, may well be asking, "Does anything stay the same?"

If there exists a single area of life left unaffected by raging technological change, it isn't continuing professional education. Whether or not to keep current with job-related technology is no longer an option. Dropping out, hermit-style, appears to be a professional's only way to avoid developing a working relationship with the computer-generated technology explosion.

Organizations like the Society of Actuaries have a responsibility to offer members the preparation that will keep them employed and competitive, according to Joe Abel, SOA program manager for the Continuing Education Department. "An educational organization like the Society must make a major investment in the learning power of the people [it serves]."

Abel, who has a doctorate in educational psychology and continues to teach college humanities courses, explains that the phenomenon of technology has transformed the world economy into a knowledge-based economy.

"The location of this economy is the human mind," he said, "and the capital in this new economy is knowledge. The major investment area in the 21st century will be the minds that produce ideas and knowledge. Therefore, it is the 'knowledge worker' who will be valuable in the future.

"A major service in this new economy is teaching intellectual capital by providing relevant, thorough educational opportunities," Abel continued. "Technology is becoming increasingly indispensable in competently providing this service."

To fulfill the need for this training, the SOA has been exploring for several



years the costs and capabilities attached to advanced technology. Certain technologies, such as CD-ROM, multimedia, and satellite-based training already are incorporated in the SOA curriculum. At the 1995 spring meetings, attendees can opt for hands-on training in electronic bulletin boards; they can learn to navigate the fabled Internet computer network, learn some computer applications of actuarial tools, discuss the anatomy of systems projects, hear the long-term care valuation presented on computer diskette, and listen to an explanation of the SOA's work on the National Health Care Database.

Barbara Choyke, an educator by training and director of Continuing Education at the Society, said members are enthusiastic about Computer Assisted Learning (CAL) tools. "We've done surveys on the use of technology in our teaching curriculum. Everybody wants it."

Future forays into advanced technology teaching and learning aids will depend on cost and ability to market to members. Certain hurdles to producing this technology do exist. For example, developing CD-ROM programs requires four months, and the costs are high when compared to more traditional learning tools, Choyke said. Also, because of the long development period, often the programs can't keep up with the changing issues in actuarial science.

So far, the SOA has created interactive CAL programs for PCs, laser disk, or CD-ROM. It also has incorporated the use of "touch screen technology."

The SOA's Advanced Technology Working Group for the Retirement Systems Practice Area also has issued its report recommending the use of new technology in several areas. The group would like to see more material being put on CD-ROMs, syllabus materials put on-line, faster feedback on exam performance, "on demand" exams, and an "electronic library" accessible to the members.

The group commended the instructor-led teleconferencing training the SOA already does. Indeed, Choyke said this training, which makes use of telephone satellite technology, is very popular. "We do two of these a year. We're able to cover 50 cities in a four-hour broadcast and can train 1,500 to 1,700 attendees at a time."

Future development of high tech materials depends on analysis of the members' needs, Choyke said. That philosophy is shared by other educators outside the SOA. Arthur Paton, a scientist and manager of Institutional Design Technology Systems at Motorola University, in Schaumburg, Ill., said some companies "jump on the tech bandwagon." They incorporate the technology, then figure out how to apply it. Motorola, which trains 1,000 workers of different cultures and languages worldwide every year, only applies the technology it needs.

Motorola University has been a leader in the use of automated training labs and self-administered training. Paton describes the reaction of his workforce as "wildly enthusiastic." His company uses sophisticated methods, such as virtual reality training for manufacturing workers who must manipulate robotics.

Asked if advanced training acts as a stress reliever for workers, Paton said,

"You bet. Can you imagine how a worker feels when he is told, 'OK, use this \$800,000 piece of equipment; don't break it; and don't hold up the line?'" Thanks to virtual reality training, workers are "95 to 98% trained when they walk on the factory floor the first day."

Educators at Brown University, a leader in CAL, agree that this type of training provides a comfort level unattainable in other forms of teaching. According to Brown spokesperson

Tracy Sweeney, medical students use virtual reality in some classes.

The university also has developed "hypermedia" courses for literature, history, and culture, a technology until recently used only by the military. Hypermedia links unrelated subjects so that students studying one subject can press a button and get related information from another academic discipline. For example, a student reading *Uncle Tom's Cabin* for literature class can call

up information on how the book relates to American history.

The uses of technology for professional continuing education are extremely valuable. As Paton points out, Motorola's experience with self-administered desktop training shows that the more self education done, the lower the costs to a company over an employee's lifecycle.

## SOA course now focuses on derivatives

by Judy Strachan  
SOA Education Actuary

**D**erivative securities have been frequent news items in the last year. Many institutions, such as Proctor & Gamble and Orange County, California, have lost billions of dollars investing in derivative securities.

The mathematics of pricing and analyzing derivatives securities is complex and understood by few people. This complexity provides the actuary who has strong analytic and quantitative skills a potential employment advantage over other professions. However, actuaries must first become familiar with the mathematical models and techniques necessary to quantify

the risks in a derivative security.

Recognizing this potential and the need for further education, the Finance Track of the Society of Actuaries examination system restructured Course F-480, formerly Advanced Asset/Liability Management. F-480 is now Derivative Securities: Theory and Application. It covers the theory of option pricing using the textbook, *Options, Futures and Other Derivative Securities*, by J.C. Hull. Also included on the course is the report, "Derivatives: Practices and Principles," published by the Group of 30 in July 1993. The Group of 30 is an organization comprised of 30 international banks,

chaired by Paul Volker. This study note covers regulatory and accounting issues related to derivative securities.

The Society's education system now allows Fellows who wish to sit for exams, including Course F-480, to do so for continuing education purposes.

A complete list of references for Course F-480 is shown below. To keep the course of reading current, the Finance Track Education Objectives Committee currently seeks comments on these readings, as well as suggestions for additions. Please send any comments or suggestions to Judy Strachan at the Society office.

### **COURSE F-480 — DERIVATIVE SECURITIES: THEORY AND APPLICATION (15 Credits) Elective**

#### **A) Option Theory & Stochastic Calculus**

The readings in this section cover forward and futures contracts, Black-Scholes analysis, stock options, pricing derivatives securities, hedging, and the mathematics of stochastic calculus.

Published Reference (must be secured by candidate): *Options, Futures and Other Derivative Securities* (Second Edition), 1993, by J.C. Hull, Chapters 1, 2, 3 (include Appendix A),

4, 5, 7-9, 10 (include Appendices A and B), 12 (include Appendix A and B), 13 (exclude 13.6-13.10 and Appendix A), 14 (include Appendix A), 15.

Study Note: #480-26-95, Stochastic Calculus without Tears

#### **B) Multivariate Analysis**

The readings in this section cover the analysis of the effects of non-parallel yield curve shifts for asset/liability management.

Study Notes:  
#480-21-92, Non-Parallel Yield Curve Shifts and Durational Leverage  
#480-23-93, Non-Parallel Yield

Curve Shifts and Immunization  
#480-25-92, Bond Portfolio Immunization: Tests of Maturity, One-and Two-Factor Duration Matching Strategies

#### **C) Applications**

The readings in this section cover various applications of tools and techniques of asset/liability management. Study Notes:

#480-27-92, A Generalized Framework for Pricing Contingent Cash Flows  
#480-31-94, Derivatives: Practices and Principles (pp. 25-64)