

RISKY BUSINESS

—News and notes on the Actuarial Studies Program—

Department of Mathematics

Spring 1999

The University of Texas at Austin

From the Director



As my tenth year operating the actuarial program in Mathematics draws to an end, it seems natural to look both backwards (also see **Are the** on page 2, **Former** on page 1) and forwards (also see **Y2K classes** on page 1, **New teacher** on page 1).

Way in the past was the frantic period of learning the life-contingencies material so as to teach that class on three month's notice, and then that strenuous 15 months when I was taking actuarial exams side by side with my students.

Primarily, however, the past has been a time of steady evolution—in the structure of the program, the classes taught, my comprehension of the real meaning of the material, relations with employers, relations with alums, fund-raising, financial aid, and so on.

After that evolution has come the revolution—the dramatically new exam systems and the corresponding dramatic changes in our program. Deciding on which classes to offer, learning the new material, and organizing those new classes in detail has consumed increasing amounts of my time and will totally consume my coming summer. I expect everything to be ready to go by this coming fall (or I'm in deep trouble).

I confess to hoping that no more major changes in the exam systems take place before I retire in a dozen or so years. Maybe that's too much to hope for: I've heard wags say that the systems always change often enough that hardly anyone can get through

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Y2K classes set for fall

A revamped actuarial curriculum takes effect this coming fall in response to the new CAS and SoA exam systems that begin in January 2000.

Many Mathematics faculty members have taught the calculus, linear algebra, probability, and statistics that currently are tested in the preliminary exams—SoA/CAS Exams 100/1 on calculus and linear algebra and 110/2 on probability and statistics. This will remain true for the material tested in the new three-hour Joint Exam 1 on calculus and probability.

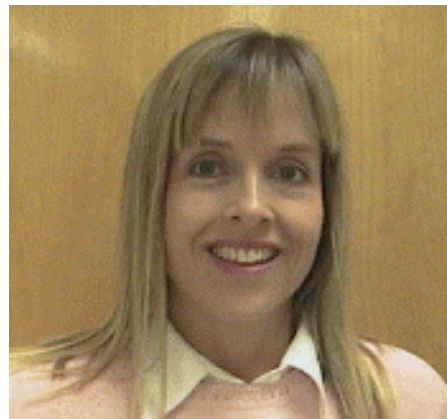
For the past decade, Jim Daniel has taught the interest theory, life contingencies, applied statistics, much of the numerical analysis, and the credibility theory and loss distributions tested in the other actuarial exams for which the UT-Austin actuarial program

New teacher added

Ms. Corinne Irwin will begin teaching the Interest Theory class each spring semester starting in 2000. This new—and younger, and female—face will add a great deal to the actuarial program, freeing Jim Daniel to teach an additional higher level actuarial class each spring.

Born in Amarillo, Corinne received both her B.A. in Mathematics and her M.A. in Mathematics Education from UT-Austin. She has taught mathematics full time at Austin Community College since 1980 and part time at UT-Austin off and on for fifteen years.

Although she has taught a wide range of classes both at ACC and at UT-Austin and has assisted math-anxious students, this will be her first experience with interest



theory. The program and the future actuarial students are lucky that she is willing to invest the time and energy to master this material and assist with the actuarial program. *Welcome, Corinne!*

has provided classwork: SoA 140 on interest theory, SoA/CAS 120/3A on applied statistics, SoA/CAS 135/3C on numerical analysis, SoA 150 on life contingencies, CAS 4A on life contingencies and interest theory, and CAS 4B (with its 15 SoA credits) on credibility theory and loss distributions.

With the shift of economics and finance along with interest theory into new four-hour Joint Exam 2, students will now take classes in other departments to learn this material—except for interest theory,

See **New classes** on page 3

Former students

tracked during 90's

What's been happening to the students that have gone through the actuarial program in the decade since it moved to Mathematics in 1989?

According to Jim Daniel's informal records, 174 students have taken entry-level actuarial jobs from December 1989 through December 1998; 62 (36%) were women. Of these 174, 52 have changed—some more than once—to another actuarial employer from their original, and 20 have left the actuarial field (some after having become an Associate).

Twenty of the 174 now hold the ASA designation and eight the ACAS. Four hold the FSA, and one the FCAS. One of those included above holds both the ASA and the ACAS designations. The speed records from undergraduate degree to credentials are: to ASA (200 credits), 0.5 years; to ASA (300 credits), 3 years; to ACAS, 1.5 years; to FSA, 4 years; to FCAS, 3 years.

Are the good students becoming scarcer?

Data indicate a trend both nationally and at UT-Austin toward fewer actuarial students and significantly fewer such students that have passed at least one exam. The better students seem at least as strong as ever, however.

Jim Daniel recently compiled data on the exam records of UT-Austin students seeking entry-level actuarial jobs since December 1989 and observed the possibility of this trend. When he circulated the data to other actuarial educators and asked what they were seeing, many—especially at state universities—reported observing the same phenomenon.

For the UT-Austin data, consider the latest two years as “recent” and the preceding eight as “early”. In early years, the average number of students seeking entry-level jobs each year was about 31, compared with 25 in recent years. The percentage of those job seekers that had passed at least one actuarial exam was about 76% in the early period, but about 44% recently.

It’s important to note that the better students seem as strong as ever, however. Among the earlier students that had passed at least one exam, the average number of exams passed was 2.26; among such recent students it rose to 2.38.

According to Society of Actuaries figures, the numbers of people taking the SoA/CAS Exam 100/1 annually worldwide peaked at about 11,000 in 1990 but fell rapidly to about 6200 by 1995, from where it has drifted slowly down to 1998’s roughly 5900. The corresponding numbers in the United States are about 8300 in 1990, 4600 in 1995, and 4100 in 1998, which represents a bigger final drop.

When the 100/1 exam was changed in November 1995 to 45 questions rather than 60, the worldwide pass rate fell from its consistent 40% to about 30%; in the United States, that fall was from a pass rate of 36% to one of about 26% now.

This means that the numbers passing worldwide were about 4400 at the 1990 peak, falling quickly to about 2500 in the year preceding the 1995 exam change, and down to about 1800 in 1998. Within the United States, the corresponding numbers are 3000 at the peak, 1700 just before the 1995 exam change, and just 1100 in 1998. Since the year leading into the changes in Exam 100/1, that’s more than a 30% drop in the numbers passing in the United States—compared to a drop of 10% in the numbers taking the exam there.

If one assumes that mainly sophomores, juniors, and seniors take the exam, then one would expect the reduction in numbers passing to be reflected in the exam records of graduates especially in the last couple of years—much as we are seeing at UT-Austin.

You can’t detect statistically significant trends in such short time series, but the numbers are suggestive. Various actuarial educators have proposed a number of factors in addition to the 1995 exam change that might contribute to such a trend.

1) The recently strong job market. Students may take exams less seriously when they see others with no exams finding actuarial jobs.

2) The recently strong job market again. In early years when there were no jobs for those with no exams, such students may not have even sought jobs.

3) Calculus teaching. The gradual nationwide drift toward a more conceptual and less computational approach in calculus classes may prepare students less well for the exam.

Any trend may become more pronounced under the new exam systems, in which the primarily-calculus exam will be replaced by one on calculus and probability in a risk setting.

ASAC helps plan, revamp program

The Actuarial Studies Advisory Council (ASAC) meets each fall to provide advice on the operation of the program, hear a detailed report on the use of gift monies, brainstorm on future activities, and assist with fund-raising plans.

The fall 1998 meeting was again dominated by discussion of the major changes coming in the SoA and CAS exam systems and how UT-Austin can adapt to them. After the meeting, the usual reception for ASAC members and actuarial students was a lively success.

Present ASAC members are: Wayne Barnard of American General Insurance, Houston; Malcolm Brachman of Northwest Oil, Dallas; Frank Broll of American National Insurance, Galveston (ASAC Chair); John Butcher of Tillinghast/Towers Perrin, Dallas; Jim Davis of Milliman & Robertson, Dallas; Phil Dial of Rudd & Wisdom, Austin; Brian Forman of Columbia Universal Life, Austin; Tom Hope of William Mercer Co., Houston; Valerie Lopez of Towers Perrin, Chicago; Francois Morissette of TIG Insurance, Irving; Norman Parrish of Hewitt Associates, The Woodlands; Roger Ray of Watson Wyatt Worldwide, Dallas; Tammy Shelton of Buck Consultants, Dallas; Glenn Tobleman of Lewis & Ellis, Richardson; and Geoff Werner of USAA Insurance, San Antonio.

Jessica Wyatt

Omaha

Freshman MIS major. Interested in ballet, travel, music, yoga.

Multiple mailings explained

Some of you sometimes kindly inform us that you’ve received two sets of student resumés or two or three fund-raising letters, and you suggest that we cut back to save money. Here’s why we do what we do.

We feel strongly that student resumés should be sent to every actuarial employer in the region, and we feel equally strongly that they should be sent to every financial contributor to the program. That means that anyone who is an individual donor and also our corporate contact person at an actuarial employer will receive two packets—and we consider this appropriate.

Fund-raising letters go to all alums of the program. Such letters also go to every individual actuary in Texas (seeking individual contributions) as well as to our corporate contact person at every actuarial employer in the region (seeking corporate contributions). Alumni actuaries in Texas that serve as our corporate contact persons could thus receive three different solicitations. We hope that this doesn’t offend anyone, but we mustn’t miss any opportunity to stimulate a gift to support the program, whether on behalf of your company, yourself as a Texas actuary, or yourself as a UT-Austin actuarial alum.

Only one makes ASA

To the best of our knowledge, only one person that was a UT actuarial student since fall 1989 has become an Associate since last year's *Risky Business*—Anmol Mehra, ASA; Towers Perrin (Houston).

Starting with the 1994 issue, *Risky Business* has attempted to identify all new Associates that have come through the UT program since its move to Mathematics (omissions are regretted, and corrections will be appreciated). No attempt is made to recognize other important status changes, however: Fellowship, membership in the Academy, marriage, parenthood, Lotto winnings, and the like. This is just a one-person program, remember!

Check out our Website:

<http://www.utexas.edu/depts/acs/>
for resumés, job placements, classes,
and program information.

Director continues...

the system without encountering at least one major change.

We don't plan to stand still here, however, even if exam systems do stay fairly constant. We're discussing developing formal undergraduate and graduate degrees in actuarial mathematics, while maintaining our flexible program that allows students to major in any field they wish. And we're exploring ways to involve working actuaries in the education of our students. Evolution will continue, although preferably without revolution.

Thanks for all your help, support, and encouragement this past decade. And for the real pleasure of working with and getting to know nearly 200 students that began working as actuaries. With your assistance, the next decade will be just as great.

Jim Daniel, Director

How to reach us:

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512/471-7168: UT office
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**Sarah Fowler
Plano**

Sophomore Math major. Took 100 in February. Interested in swimming, piano, reading.

Alums host mock interviews for students

The UT Actuarial Alumni Association (UTAAA) hosts Mock Interviews twice a year for current students. Students are given the opportunity to ask questions about interviewing, resumés, and the job-search process in an informal discussion setting. After the discussion, students participate in a one-on-one interview with a UTAAA volunteer. The alumni provide the students with an evaluation of their interview and offer advice and suggestions. Student feedback from this event has been extremely positive. Many students find job interviewing to be unpleasant and stressful; the UTAAA offers them the chance to practice and refine their interviewing skills before the "real thing". And what a great opportunity for alumni to keep in contact with one another and, at the same time, give something back to the UT actuarial program!

Interested in becoming a member of the UTAAA? There is no fee, and the only requirement is that members should have taken coursework since 1989 when the actuarial program moved to the Mathematics Department under the direction of Jim Daniel. Departing students may obtain a membership form from Dr. Daniel; to join the UTAAA or volunteer at the Mock Interviews, recent alumni can contact the UTAAA Chairperson:

Lillian Cho
Milliman & Robertson, Inc.
9400 N. Central Expressway, #1000
Dallas, TX 75231
Phone: 214-863-5500
E-mail: lillian.cho@milliman.com

**Samuel (San) Hau
Hong Kong**

Senior Math major graduating in December. Passed 100. Interested in skiing, table tennis, hiking.

New classes for Y2K exams continues...

which will still be taught in Mathematics but by Corinne Irwin (see **New teacher** on page 1). Besides the interest theory, students will need to take three semesters of economics and one semester of finance (which has accounting as a prerequisite).

The new four-to-five-hour Joint Exam 3 on probabilistic actuarial models covers life (and other) contingencies, survival models, frequency- and severity-of-loss models, compound distribution models (random sums of random variables), stochastic processes, simulation of random variables, and ruin theory. This includes large parts of the probability-model material on current SoA 130, 150, 151, and 160, and CAS 4B (and 4A), plus stochastic processes. Jim Daniel will teach a new three-class sequence (two four-hour classes, one three-hour) covering this material, with two of the classes offered each fall (they can be taken simultaneously) and one each spring. One of these classes will require students to write papers explaining ideas in non-technical language. All actuarial students will be expected to complete this three-class sequence.

The new four-to-five-hour Joint Exam 4 on statistical actuarial modeling covers credibility theory, and statistical estimation issues in survival models, in frequency- and severity-of-loss models, in regression, in forecasting with time series, and in simulation. This includes large parts of the sta-

tistical material on current SoA 120, 130, 160, and CAS 4B (and 3A). Jim Daniel will teach a single new three-hour class each spring covering credibility theory and the statistical estimation issues in frequency- and severity-of-loss models and in simulation—about 40% of the syllabus for Joint Exam 4.

With the current curriculum and the current exam systems, strong UT students (those that have passed at least one exam) average having passed between two exams (usually 100 and 110) and three exams (usually 100, 110, and 140); very strong students average having passed three to five exams from among 100, 110, 120, 140, and 4B; and occasional exceptional students have passed 150 and even others.

With the new curriculum and the exam systems, we predict that the strong students will average having passed just one exam (Joint Exam 1), that the very strong students also will average having passed just one exam (Joint Exam 1 or 2) with a few having passed both Joint Exams 1 and 2, and that very exceptional students will have passed Joint Exam 3.

**Kevin Zagortz
Overland Park, KS**

Junior Math major. Passed 100, 110, 140; taking 1`50 in May. Interested in drawing, snowboarding, volleyball.



Focus on students

Student club gets busy early

This year the Actuarial Science Club got off to an active and early start, with the fall semester being busier than usual. We had many companies come to campus to give informative presentations to actuarial students at all levels. These presentations helped students learn about what actuaries do in the "real world" and to find out what qualities and skills employers are seeking in candidates. The dinners after most meetings provided students the chance to speak to potential future employers in a less formal setting.

Meetings in the fall semester began in mid-September with presentations by William M. Mercer, Inc., Rudd & Wisdom, Towers Perrin, American General, PricewaterhouseCoopers, Great-West Life, and USAA. A representative of the Natural Sciences Career Services center also talked to students about job-offer evaluation and salary negotiation. In early spring, we had presentations by the Texas Department of Insurance, Hewitt Associates, D.W. Simpson Co., Milliman & Robertson, and Watson Wyatt.

We also had a few social get-togethers that enabled the students to get to know others in the program. In early October we had fun bowling at Showplace Lanes one Friday night, and in February a group of students met for drinks and dinner at a restaurant by the lake. There were over 30 members in the club, which was led by Brandy Jones as president and Michael Musselman as treasurer.

I'd like to extend a sincere thank you to the speakers from the various companies that took the time to speak to interested students. Many students benefited from the information presented about the actuarial profession and the different types of employers. It was a successful year for the club; I wish everyone the best in their future careers.

Brandy Jones, President

Expenses of **Risky Business** are paid with gift funds from friends of the program.

Financial aid winners, needs

With educational costs continuing to rise faster than inflation, funding for financial aid continues as the program's biggest need. Most scholarships are funded by directed gifts from companies and individuals, although the George Jordan, Jr., Scholarships are funded from the many annual discretionary gifts, small and large, from both individuals and companies.

Outstanding students receiving merit-based financial aid from the actuarial program during academic year summer 1998 through spring 1999 included:

- Actuaries Club of the Southwest Scholarships: Samuel Hau, David Li, Robert Tomlinson, Terence Yiu, Kevin Zagortz
- AEGON Insurance Group Actuarial Mathematics Scholarships: Michael Musselman, Thuy Nguyen
- William W. Hand Memorial Actuarial Scholarship (American Society of Pension Actuaries): Terence Yiu
- George R. Jordan, Jr., Actuarial Scholarships: Robyn Aase, Bai-Hsiang Hsuen, Yunda Huang, David Li, Thuy Nguyen, Elvina Richardson, Stella So, Terence Yiu, Kevin Zagortz, Zuoshun Zhang
- Milliman & Robertson Standard of Excellence Actuarial Scholarship: Michael Musselman
- C. Mitchell Co. Actuarial Scholarship: David Li
- Rudd and Wisdom Actuarial Studies Scholarship: Brandy Jones
- Scruggs Consulting Actuarial Scholarship: David Li
- D. W. Simpson & Co. Scholarship: Tiffany Gresco
- Southwest Actuarial Forum Scholarships: Robert Tomlinson, Yeeon Wan, Kevin Zagortz
- USAA Actuarial Scholarships: Tiffany Gresco, Robert Tomlinson
- Watson Wyatt Actuarial Scholarship: Robert Tomlinson
- Eugene Wisdom Memorial Scholarship in Actuarial Studies: Stella So
- Actuarial Studies Excellence-Awards (Fireman's Fund and USF&G merit-based loan program to assist the Texas Department of Insurance): Aimee Clement, Alok Dhital, Samuel Hau, Paul Havens, Brandy Jones, Thuy Nguyen, Terence Yiu
- Texas Department of Insurance Internship (Fireman's Fund and USF&G program to assist the Texas Department of Insurance): Bai-Hsiang Hsuen, Elaine Hu, Frances Hu, David Li, Christine Neilsen, Robert Tomlinson, Yeeon Wan, Amy Wong



Students, alums, and local actuaries at the Daniels' fall open house.

Stella So Sugar Land

Junior Business Honors & Math major. Passed 100, 110. Studying in Singapore this term. Interested in tennis, jogging, hiking.

Tuner Hall Lincoln, NB

Sophomore Math major. Works for Starbucks, handling repairs at 22 stores. Interested in wakeboarding, fix-up projects.