Department of Mathematics
Proposed Master of Science in Actuarial Mathematics
Welcome!

Our purpose tonight is to introduce you to a proposed new Master of Science program in the Department of Mathematics: **Actuarial Mathematics**

Not only will this be a new program, it will be a very different type of program...
Who are we?
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Zhenyu Cui
Assistant Professor, Mathematics

Olympia Hadjiliadis
Associate Professor, Mathematics

Dr. Lucas G. Rubin
Assistant Dean for Academic Programs

Diogo Pinheiro
Assistant Professor, Mathematics
What is an Actuary?
An actuary analyzes the financial costs of risk and uncertainty. Actuaries use various mathematical approaches to assess the likelihood that an event will occur and help businesses and clients develop policies that minimize the cost of that risk.

Actuarial science incorporates a number of interrelated subjects, including probability, mathematics, statistics, financial theory, economics, and computer programming.
Actuaries work across multiple sectors: business, finance, insurance, sports, entertainment, real estate, as well as in government, public, and nonprofit settings.
Professional traits of an actuary:

1. Likes to work with numbers
2. Enjoys complex problem solving…using data
3. (often) a facility with (and/or interest) in programming
Why become an actuary?
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Bureau of Labor Statistics: 26% growth in profession through 2022, a pace “much faster than average”
http://www.bls.gov/ooh/math/actuaries.htm
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Why Actuarial Science?

Best Jobs of 2014 / Midlevel Income
1. Mathematician / $101,360
2. Tenured University Professor / $68,970
3. Statistician / $75,560
4. Actuary / $93,680
5. Audiologist / $69,720
6. Dental Hygienist / $76,210
7. Software Engineer / $93,350
9. Occupational Therapist / $75,400
10. Speech Pathologist / $69,870

Worst Jobs of 2014 / Midlevel Income
200. Lumberjack / $24,340
199. Newspaper Reporter / $37,090
198. Enlisted Military Personnel / $28,840
197. Taxi Driver / $22,820
196. Broadcaster / $55,360
195. Head Cook / $42,480
194. Flight Attendant $37,240
193. Garbage Collector / $22,970
192. Firefighter / $45,250
191. Corrections Officer / $38,970
Why a program in actuarial science?

…and, why specifically a *graduate* program?

There is, after all, an important point about becoming an actuary:

Completing an actuarial science degree cannot make you an actuary, only passing the professional exams does.
As a graduate degree, the program will:

1. Accommodate students with broad quantitative backgrounds

2. Provide enrolled students with focused academic training as well as targeted, industry-appropriate engagement and experiences (through professional development seminars, internships, applied research opportunities, etc.).

3. Provide specific preparation for industry examinations
A different type of program…
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Course Curriculum

Administrative Platform
Course Curriculum

Administrative Platform
Department of Mathematics
Proposed Master of Science in Actuarial Mathematics

Course Curriculum

• 36 credit / 12 course curriculum
• Can be completed part time or fulltime
• Capstone Thesis [or examination]
Course Curriculum
A Closer Look [exact content TBD]

1) a general financial mathematics course, discussing both discrete time and continuous time models;

2) a course on derivative financial assets and their pricing;

3) a course on credit and market risk management;

4) an advanced course on life-contingencies;

5) an advanced course on risk theory / actuarial models;

6) Mathematical modeling course with an emphasis on stochastic simulation and Monte Carlo Methods
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Program Advisory (Faculty and Industry)

Program Director (Faculty Member)

Industry Symposia

Exam Preparation

Dedicated Program Coordinator provides full, individualized support to every student

Administrative Platform

Provision of administrative support overseen by the Assistant Dean in cooperation with the Department
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The goal of faculty and administration is to offer a truly unique, engaging, academically-rigorous, professionally-appropriate program that meets and exceeds the needs of industry and the standards of the Society of Actuaries.
What are the next steps?

Faculty in the Department of Math are developing the curriculum

…but we want to hear your thoughts and ideas!