



Proposal to the Senate Educational Policy Committee

PROPOSAL TITLE: Master of Science in Actuarial Science

Establish a Master of Science in Actuarial Science, in the Department of Mathematics, College of Liberal Arts and Sciences.

Eliminate the Actuarial Science Concentration within the Master of Science in Applied Mathematics, one year after the Master of Science in Actuarial Science is established.

SPONSOR and COLLEGE CONTACT:

Associate Dean Kelly Ritter, College of Liberal Arts and Sciences, ritterk@illinois.edu, 333-1350

BRIEF DESCRIPTION:

The current Actuarial Science masters degree is listed as a Concentration within the Master of Science in Applied Mathematics. It has been offered in this manner through the applied mathematics program for at least a couple of decades. We propose to establish the actuarial Masters as a stand-alone degree within the Department of Mathematics, to be called the Master of Science in Actuarial Science.

We propose that this new degree follow the same basic requirements as the existing Actuarial Science Concentration. The changes proposed to the existing degree requirements are the following:

- 1) to allow a thesis option for the new Master of Science in Actuarial Science, thus bringing the degree in line with most other masters degrees offered by the Department and providing an option for MS students who wish to pursue research in actuarial science.
- 2) The Department recently created a new actuarial science graduate course aimed at Masters and PhD students. This course MATH 563 Risk Modeling and Analysis is highly appropriate for students pursuing a graduate degree in Actuarial Science, and so we propose to add it to the list of courses from which students must choose two courses toward their degree.
- 3) In order to provide a little more flexibility to students in the MS in Actuarial Science who take courses from other Departments, we propose to reduce the number of hours required in Mathematics from 24 to 20.
- 4) The Other Requirements grid of the Academic Catalog entry mistakenly omitted the minimum GPA of 3.0. Since all Math MS degrees require a 3.0 we are adding that to the grid.

The Actuarial Concentration within the Master of Science in Applied Mathematics should be disestablished one year after the Master of Science in Actuarial Science is established (giving time for current students to complete their degree or else be transferred into the new degree).

JUSTIFICATION:

The proposed new Masters degree offers substantial advantages over the current Concentration.

- (1) A Masters program in Actuarial Science would be more visible and marketable to prospective students. Students pursuing an actuarial degree look at national rankings and listings provided by professional organizations, which tend to favor stand-alone Master's programs. The new Masters program will signal to prospective students the curricular strength and faculty quality in our program at Illinois.
- (2) The separation of the actuarial masters program from the three other options within the Masters in Applied Mathematics will reduce confusion both for applicants and for departmental administrative staff.
- (3) The Master of Science in Actuarial Science degree will provide a more recognizable credential for our graduates on the job market. The current Actuarial Science Concentration does not appear on students' diplomas, since they are formally recognized as Masters students in Applied Mathematics.

The thesis option will enable the program to attract high caliber students with research interests. A research oriented Master's degree can serve as a gateway to the PhD program. The Department recently created an Actuarial Science and Risk Analytics Concentration within the Mathematics PhD program, and so is seeking to recruit well-prepared students. In addition, students taking the thesis option within the new Masters degree will assist our faculty members' research agendas.

BUDGETARY AND STAFF IMPLICATIONS:

1) Resources

- a. How does the unit intend to financially support this proposal?
No change, since the degree program already exists under another name.
- b. How will the unit create capacity or surplus to appropriately resource this program? If applicable, what functions or programs will the unit no longer support to create capacity?
The advising capacity for the thesis option can be met within existing resources. (The actuarial program in the Department of Mathematics currently has 3 tenure-stream faculty members and a specialized faculty member.) Most students will prefer the non-thesis coursework-only option, and students will be approved for the thesis option only if they perform strongly in their first-year coursework and develop research interests that match closely with faculty interests.
- c. Will the unit need to seek campus or other external resources? If so, please provide a summary of the sources and an indication of the approved support.
No.
- d. Please provide a letter of acknowledgment from the college that outlines the financial arrangements for the proposed program.
There will be no financial arrangements from the College of LAS for the MS in Actuarial Science.

2) Resource Implications

- a. Please address the impact on faculty resources including the changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc.\
None, since the program already exists under another name.

- b. Please address the impact on course enrollment in other units and provide an explanation of discussions with representatives of those units.

None.

- c. Please address the impact on the University Library

None.

- d. Please address the impact on technology and space (e.g. computer use, laboratory use, equipment, etc.)

None.

For new degree programs only:

- 3) Briefly describe how this program will support the University's mission, focus, and/or current priorities. Include specific objectives and measurable outcomes that demonstrate the program's consistency with and centrality to that mission.

The existing Actuarial Masters Concentration supports the University's academic mission by providing advanced training in a technical area that directly impacts the insurance and financial industries in Illinois, the nation, and internationally. The new degree program will continue that contribution.

- 4) Please provide an analysis of the market demand for this degree program. What market indicators are driving this proposal? What type of employment outlook should these graduates expect? What resources will be provided to assist students with job placement?

The existing Actuarial Masters Concentration enrolls about 35 students in the Fall semester, and a smaller number in the Spring (since 2nd year students can graduate in December). Many of these students are international and return to find employment in their home country. The Department already offers career placement services through the actuarial advisers and through the Actuarial Science Club.

- 5) If this is a proposed graduate program, please discuss the programs intended use of waivers. If the program is dependent on waivers, how will the unit compensate for lost tuition revenue?

The vast majority of students in the program will continue to pay tuition as they currently do in the Actuarial Masters Concentration. Note the Department offers waiver-generating Teaching Assistantships to a few actuarial masters students each year in order to meet teaching needs in the undergraduate program. We expect to continue this practice.

DESIRED EFFECTIVE DATE: Fall 2018

STATEMENT FOR ACADEMIC CATALOG:

Master of Science in Actuarial Science

Non-thesis Option

	Hours
Two courses chosen from the following: MATH 563 Risk Modeling and Analysis MATH 565 Actuarial Models for Life Contingencies MATH 567 Actuarial Models for Financial Economics MATH 568 Actuarial Loss Models MATH 569 Casualty Actuarial Science	8
Electives chosen in consultation with the faculty advisors. These electives may include additional courses from the list above.	24
Total Hours	32
Other Requirements¹	
<u>MATH 405</u> , <u>MATH 406</u> , <u>MATH 415</u> , <u>MATH 444</u> , and <u>MATH 499</u> cannot be counted toward this graduate degree.	
Minimum Hours Required Within the Unit:	20
Minimum GPA:	3.0
Minimum 500-level Hours Required Overall:	12 (8 in Mathematics)
Grad Other Degree Requirements	

¹ For additional details and requirements refer to the department's [Guide to Graduate Studies](#) and the [Graduate College Handbook](#).

Thesis Option

	Hours
Two courses chosen from the following: MATH 563 Risk Modeling and Analysis MATH 565 Actuarial Models for Life Contingencies MATH 567 Actuarial Models for Financial Economics MATH 568 Actuarial Loss Models MATH 569 Casualty Actuarial Science	8
Electives chosen in consultation with the faculty advisors. These electives may include additional courses from the list above.	20
Thesis Research (min/max applied toward degree)	4
Total Hours	32
Other Requirements¹	
<u>MATH 405</u> , <u>MATH 406</u> , <u>MATH 415</u> , <u>MATH 444</u> , and <u>MATH 499</u> cannot be counted toward this graduate degree.	
Minimum Hours Required Within the Unit:	20


Minimum GPA:	3.0
Minimum 500-level Hours Required Overall:	12 (8 in Mathematics)

Grad Other Degree Requirements

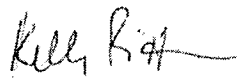
¹ For additional details and requirements refer to the department's [Guide to Graduate Studies](#) and the [Graduate College Handbook](#).

CLEARANCES:

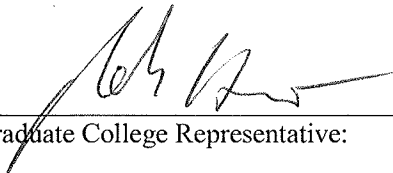
Signatures:


Unit Representative:

4/17/17
Date:


College Representative:

8-15-17
Date:


Graduate College Representative:

9/26/17
Date:

Appendix A:

Existing Program of Study for MS Applied Mathematics – Actuarial Science Concentration

Code	Title	Hours
Two of:		8
MATH 565	Actuarial Models for Life Contingencies	
MATH 567	Actuarial Models for Financial Economics	
MATH 568	Actuarial Loss Models	
MATH 569	Casualty Actuarial Science	
Electives chosen in consultation with the faculty advisors. These electives may include additional courses from the list above.		24
Total Hours		32

Other Requirements¹

Requirement	Description
Other requirements may overlap	
MATH 405 , MATH 406 , MATH 415 , MATH 444 , and MATH 499 cannot be counted toward this graduate degree.	
Minimum Hours Required Within the Unit:	24
Minimum 500-level Hours Required Overall:	12 (8 in Mathematics)
Grad Other Degree Requirements	

¹ For additional details and requirements refer to the department's [Guide to Graduate Studies](#) and the [Graduate College Handbook](#).

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

University Library
Office of Dean of Libraries
and University Librarian
230 Main Library, MC-522
1408 West Gregory Drive
Urbana, IL 61801



May 22, 2017

Amy Lawrence Elli
Associate Director of HR Hiring & Associate Director Academic Programs
College of Liberal Arts & Sciences
Office of the Dean
2090 Lincoln Hall, MC-448

Dear Mrs. Elli:

Earlier this week, the University Library received a proposal from LAS to establish a Master of Science in Actuarial Science, in the Department of Mathematics, College of Liberal Arts and Sciences and to eliminate the Actuarial Science Concentration within the Master of Science in Applied Mathematics, one year after the Master of Science in Actuarial Science is established.

Based upon the documents we received and Tim Cole reviewed, it is our belief that there will be no significant impact on collection development, instruction, or other operations in the University Library.

If additional services or materials are required as the programs further develop, we will be happy to discuss those needs as they emerge.

Sincerely,

A handwritten signature in black ink that reads "William H. Mischo".

William H. Mischo
Acting Dean of Libraries and University Library
Berthold Family Professor in Information Access and Delivery

e-c: Tim Cole
Runhuan Feng
Richard Laugesen
Thomas Teper

UNIVERSITY OF ILLINOIS
AT URBANA - CHAMPAIGN

EP.18.16

Office of the Provost and Vice Chancellor for Academic
Affairs

Swanlund Administration Building
601 East John Street
Champaign, IL 61820



September 28, 2017

Gay Miller, Chair
Senate Committee on Educational Policy
Office of the Senate
228 English Building, MC-461

Dear Professor Miller:

Enclosed is a copy of a proposal from the College of Liberal Arts and Sciences to:

- 1) Establish the Master of Science in Actuarial Science and
- 2) Eliminate the Concentration in Actuarial Science within the Master of Science in Applied Mathematics.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Kathryn A. Martensen'.

Kathryn A. Martensen
Assistant Provost

Enclosures

c: K. Ritter
A. Elli
A. Edwards
E. Stuby

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN



Graduate College

110 Coble Hall
801 South Wright Street
Champaign, IL 61820-6210

Executive Committee

2017-2018 Members

Wojtek Chodzko-Zajko
Dean & Chair
Graduate College

Members

Conrad Bakker
Art & Design

Zachary Berent
Graduate Student, Mechanical
Science & Engineering

Xialong Chen
Accountancy

Kent Choquette
Electrical and Computer
Engineering

Eleanor Courtemanche
English

Luisa-Elena Delgado
Spanish & Portuguese

George Gasyna
Slavic Languages & Literature

Julie Hengst
Speech & Hearing Science

Tania Ionin
Linguistics

Karla Moller
Curriculum & Instruction

Lori Raetzman
Molecular & Integrative
Physiology

Katie Ranard
Graduate Student, Nutritional
Sciences

Sandra Rodriguez-Zas
Animal Sciences

Sela Sar
Advertising

Mark Steinberg
History

Terri Weissman
Art & Design

September 26, 2017

Kathy Martensen
Office of the Provost

Dear Kathy,

Included is a proposal from the College of Liberal Arts & Sciences to **“Establish a M.S. in Actuarial Science and Eliminate the Actuarial Science Concentration within the MS in Applied Mathematics”**.

The proposal was received on August 28, 2017 and reviewed at the Graduate College Executive Committee meeting on September 22, 2017. The committee approved the proposal without revision and we find that this proposal meets the standards of Graduate Education at Illinois. We now forward for your review.

Sincerely,

John C. Hart
Executive Associate Dean
Graduate College

c: Kelly Ritter
A. McKinney

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

College of Liberal Arts and Sciences
Office of the Dean

2090 Lincoln Hall
702 S. Wright Street, MC-448
Urbana, IL 61801



August 15, 2017

Wojtek Chodzko-Zajko
Dean, Graduate College
204 Coble Hall MC-322

Dear Dean Chodzko-Zajko:

The Committee on Courses and Curricula, on behalf of the Faculty of the College of Liberal Arts and Sciences has voted to approve the following proposal:

Establish a Master of Science in Actuarial Science

The attached proposal also requests the elimination of the Actuarial Science Concentration within the Master of Science in Applied Mathematics, one year after the Master of Science in Actuarial Science is established. Please let me know if you have any questions on this proposal. This proposal is now ready for review by the Graduate College for proposed implementation Fall 2018.

Sincerely,

Kelly Ritter
Associate Dean

enclosure

C: Professor Lee DeVille
Professor Runhuan Feng
Professor Sheldon Katz