APPROVED BY SENATE
04/01/2019

EP.19.57_FINAL
Approved by EP 03/11/19

ILLINOIS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Proposal to the Senate Educational Policy Committee

PROPOSAL TITLE: Revise the BSLAS in Actuarial Science, Department of Mathematics, College of Liberal Arts & Sciences

SPONSOR: Runhuan Feng, Associate Professor of Mathematics, Director of Actuarial Science, rfeng@illinois.edu, (217) 300-5630

COLLEGE CONTACT: Kelly Ritter, Associate Dean of LAS, 333-1350

BRIEF DESCRIPTION:

- The requirement of ASRM 471 is removed and ASRM 471 and three new courses are added to the list of options for upper-level Actuarial Science and Risk Management course work.
- FIN 300 and FIN 321 are moved from the list of required finance courses to the list of elective economics and finance courses.
- ACCY 200 is added to the list of elective economics and finance courses.
- MATH 461 is removed as an option.
- The overall minimum required coursework is reduced from 59 hours to 58 hours.

JUSTIFICATION:

The actuarial science curriculum prepares students for careers as actuaries. The Society of Actuaries (SOA) and the Casualty Actuarial Society (CAS) are the two organizations that administer the credentialing exams for actuaries. Both professional organizations have recently changed their credentialing requirements in response to the changing needs of the industries. An update to the actuarial curriculum is needed to align with the educational standards of the professional organizations.

The purpose of the proposed changes is two-fold:

(1) *Increase course variety and expand coverage of content typically on actuarial professional exams*. The two credentialing professional bodies now have different educational requirements. More course variety is necessary to cover a broader knowledge base to prepare students for careers as actuaries. We achieve this by requiring 4 400-level Actuarial Science and Risk Management courses instead of 3 and adding more options for students to choose from. MATH 461 is removed as an option for students as ASRM 401 better prepares students for the first professional exam.

(2) *Increase options of elective finance and economics courses*. In order to meet students' needs for the "validation by educational experience" portion of the credentialing process, it is necessary for us to include more courses as electives.

BUDGETARY AND STAFF IMPLICATIONS: *(Please respond to each of the following questions.)*

1) Resources
   a. How does the unit intend to financially support this proposal?
      This proposal requires students to take only one additional course in Mathematics or Statistics departments. The new choices of elective actuarial courses have already been offered as advanced topics courses in the past. Departments of Mathematics and Statistics have recently concluded a joint search for a tenure-stream faculty member, who will provide additional teaching support for added course choices.

   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?
      No additional resource is required.

   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.
      Yes. Departments of Accounting, Finance and Statistics have agreed to commit teaching resources to offer courses on the list of major requirements. Please find in the attachment support letters from the three departments.

   d. Please provide a letter of acknowledgment from the college that outlines the financial arrangements for the proposed program.
      The College of LAS is not providing any new operational funds to support these revisions.

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.
      The actuarial science program has a high student-faculty ratio. We have 394 actuarial science majors and 3 tenure-stream faculty members and 2 lecturers. Many of upper-level actuarial courses are offered in class size of 120-130 students. We expect the increased course variety would modestly reduce class sizes and provide a better class experience to students.

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

We expect the addition of course options would lead to modest increases in enrollment in courses offered by Departments of Accounting, and Statistics. Please find in the attachment their support letters.

c. Please address the impact on the University Library

An increase in enrollments is not anticipated and therefore library resources should not be impacted due to this revision.

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

No impact is anticipated.

DESIRED EFFECTIVE DATE: Fall 2020, or Fall 2019 if possible

STATEMENT FOR ACADEMIC CATALOG:

Actuarial Science

https://math.illinois.edu/academics/actuarial-science

This major is sponsored by the Department of Mathematics, and is an interdisciplinary subject involving mathematics, statistics, and financial economics. It is designed to prepare students to enter the actuarial profession, as well as to provide a background in quantitative finance and risk management. See also Mathematics and Mathematics and Computer Science.

For the Degree of Bachelor of Science in Liberal Arts and Sciences

Major in Actuarial Science

E-mail: ASRM-advising@illinois.edu

Minimum required major and supporting course work normally equates to 58-61 hours including 32-33 hours of actuarial courses beyond calculus.

General education: Students must complete the Campus General Education requirements including the campus general education language requirement.

Twelve hours of 300- or 400-level courses in the major must be taken on this campus.

Minimum hours required for graduation: 120 hours. Students will complete 40 hours of upper division coursework (these hours can be drawn from all elements of the degree).

Departmental distinction: To qualify for distinction, the student must have a grade point average in ASRM courses of at least 3.25, and pass at least two examinations offered by the professional actuarial societies. To qualify for high or highest distinction, the student must have passed at least three professional exams, with highest distinction going to those whose grade point averages in mathematics are at least 3.75. Finance courses and additional professional exams may also be given consideration in close decisions.

Calculus through Math 241 Calculus III or equivalent	11-12
Select one of the following: CS 101 Intro Computing: Engrg & Sc: CS 105 Intro Computing: Non-Tech CS 125 Intro to Computer Science	3
ASRM 210 Theory of Interest (Formerly MATH 210)	3

ASRM 401/STAT 408 Actuarial Statistics I (Formerly Math 408)	4
ASRM 402/STAT 409 Actuarial Statistics II (Formerly MATH 409)	4
ASRM 406 Linear Algebra with Financial Applications (Formerly Math 410)	3
ASRM 450/STAT 420 Methods of Applied Statistics (Formerly Math 469)	3
Select four of the following: ASRM 471 Life Contingencies I (Formerly MATH 471) ASRM 472 Life Contingencies II(Formerly MATH 472) ASRM 461 Loss Models (Formerly MATH 478) ASRM 469 Casualty Actuarial Mathematics (Formerly Math 479) ASRM 409 Stochastic Processes for Finance & Insurance ASRM 410 Investments and Financial Markets(Formerly MATH 476) ASRM 451/ STAT 431 Basics of Statistical Learning	12 - 13
Select an additional course from the above list or an approved section of ASRM 499 (Formerly MATH 490)	3
FIN 221 Corporate Finance	3
Three additional courses chosen from: ACCY 200 Fundamentals of Accounting ECON 302 Inter Microeconomic Theory ECON 303 Inter Macroeconomic Theory FIN 230, Introduction to Insurance FIN 300 Financial Markets FIN 321 Advanced Corporate Finance FIN 431 Property-Liability Insurance FIN 432 Managing Fin Risk for Insurers FIN 434 Employee Benefit Plans	9

CLEARANCES:

Signatures:

December 7, 2018

_____ _____

Unit Representative: Date:

2-28-19

_____ _____

College Representative: Date:

Appendix A:

Comparative Table of Proposed Changes

Current Hours	**Current Requirements**	**Proposed Hours**	**Proposed Requirements**
11-12	Calculus through Math 241 or equivalent	11-12	Same
3	CS 101, CS 105 or CS 125	3	Same
3	ASRM 210 Theory of Interest	3	ASRM 210
4	ASRM 401/STAT 408 Actuarial Statistics I OR MATH 461 Probability Theory	4	ASRM 401/STAT 408 Actuarial Statistics I
4	ASRM 402/STAT 409 Actuarial Statistics II	4	ASRM 402/ STAT 409 Actuarial Statistics II
3 or 4	ASRM 406 Linear Algebra with Financial Applications	3	ASRM 406 Linear Algebra with Financial Applications
3 or 4	ASRM 450/STAT 420 Methods of Applied Statistics	3	ASRM 450/STAT 420 Methods of Applied Statistics
4	ASRM 471 Life Contingencies I		
6	Select two of the following: ASRM 472 ASRM 410 ASRM 461 ASRM 469	12-13	Select four of the following: ASRM 471 Life Contingencies I (Formerly MATH 471) ASRM 472 Life Contingencies II(Formerly MATH 472) ASRM 461 Loss Models (Formerly MATH 478) ASRM 469 Casualty Actuarial Mathematics (Formerly Math 479) ASRM 409 Stochastic Processes for Finance & Insurance ASRM 410 Investments and Financial Markets(Formerly MATH 476) STAT 431/ASRM 451 Basics of Statistical Learning
3	Select an additional course from the above list or an approved section of Math 490	3	Select an additional course from the above list or ASRM 499
3	FIN 221 Corporate Finance	3	FIN 221 Corporate Finance
3	FIN 300 Financial Markets		
3	FIN 321 Advanced Corporate Finance		
6	Select two of the following: ECON 302 Inter Microeconomic Theory	9	Three additional courses from ACCY 200 Fundamentals of Accounting

	ECON 303 Inter Macroeconomic Theory FIN 230, Introduction to Insurance FIN 431 Property-Liability Insurance FIN 432 Managing Fin Risk for Insurers FIN 434 Employee Benefit Plans		ECON 302 Inter Microeconomic Theory ECON 303 Inter Macroeconomic Theory FIN 230, Introduction to Insurance FIN 300 Financial Markets FIN 321 Advanced Corporate Finance FIN 431 Property-Liability Insurance FIN 432 Managing Fin Risk for Insurers FIN 434 Employee Benefit Plans
59	**TOTAL HOURS**	**58**	**TOTAL HOURS minimum**

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Department of Accountancy
College of Business
360 Wohlers Hall
1206 South Sixth Street
Champaign, IL 61820

TO: Corrie Proksa
Advisor, Actuarial Science, Department of Mathematics

FROM: Brooke Elliott
Head, Department of Accountancy

DATE: January 12, 2018

RE: ACCY 200 Availability

Per email from Corrie, dated October 11, the actuarial science program in the Department of Mathematics would like to add ACCY 200 to their curriculum. The Society of Actuaries, the actuarial science credentialing body, will be requiring an accounting course as part of their credentialing process. This new requirement will be effective July 1, 2018 and will increase the demand from actuarial science majors.

This increase will affect enrollments for fall 2018 and beyond. The Department of Accountancy has agreed to provide 30 seats for actuarial science majors in the fall term and 120 seats in the spring term. Cindy Wood will manage the registration for ACCY 200 and allow seats for the actuarial science major code of 0461.

If you have any questions, please let me know.

telephone 217-333-0857

UNIVERSITY OF ILLINOIS
AT URBANA–CHAMPAIGN

Department of Statistics
101 Illini Hall
725 South Wright Street
Champaign, IL 61820
USA

Jan 7, 2018

Dear Runhuan,

Thank you for sending the proposed revision of the Actuarial Science BS program. We have reviewed it and are pleased to assist in meeting the increasing statistical training of actuarial science students. In particular, we support including ASRM 451 (STAT 432) as a required course, and we have already begun processing this cross-listing. We will continue to be in contact concerning the statistical training of the Actuarial Science BS students.

Sincerely,

Jeff Douglas

Professor of Statistics

telephone 217-333-2167 • *fax* 217-244-7190

Re: Actuarial Science Proposed Undergraduate Program changes

The Finance Department has been consulted and made aware of these proposed program changes and how they would affect demand for Finance courses. The Finance Department has no objections to these changes and supports the new program proposal by Actuarial Science.

Sincerely,

Michael A. Dyer, Ph.D.

Faculty Director of Undergraduate Program, and Advising & Enrollment

Department of Finance

Gies College of Business

University of Illinois

ILLINOIS

COLLEGE OF LIBERAL ARTS & SCIENCES

Office of the Dean
2090 Lincoln Hall
702 S. Wright St.
Urbana, IL 61801

February 28, 2019

Kathryn Martensen
Associate Provost
Office of the Provost and Vice Chancellor for Academic Affairs
207 Swanlund Administration Building
MC-304

Dear Kathy:

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:

Revision to the BSLAS in Actuarial Science

This proposal is now ready for review by the Senate Educational Policy Committee for proposed implementation in Fall 2019.

Sincerely,

Kelly Ritter
Associate Dean

enclosures
C: Runhuan Feng
Jeremy Tyson