



# The University of Georgia

University Council  
Athens, Georgia 30602

April 11, 2012

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Undergraduate Student Representative – Mr. Marshall Mosher

Graduate Student Representative – Mr. Zachary Watne

Dear Colleagues:

The attached proposal for a new Undergraduate Certificate in Actuarial Science will be an agenda item for the April 18, 2012, Full University Curriculum Committee meeting.

Sincerely,

David E. Shipley, Chair  
University Curriculum Committee

cc: Provost Jere W. Morehead  
Dr. Laura D. Jolly



# The University of Georgia

Terry College of Business

Robert T. Sumichrast, *Dean*  
*Simon S. Selig, Jr. Chair for*  
*Economic Growth*

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April 2, 2012

Mr. Jere W. Morehead  
Senior Vice President for Academic Affairs and Provost  
203 Administration Building  
The University of Georgia  
Athens, GA 30602  
CAMPUS MAIL

Dear Jere:

The Faculty of the Terry College of Business has approved the unanimous recommendation of the Terry Undergraduate Program Committee for a Certificate in Actuarial Science effective spring 2013. As the next step in the process, I request that the University Curriculum Committee consider this proposed change. The proposed Certificate in Actuarial Science is attached.

The Certificate in Actuarial Science (Certificate) is designed to complement the Bachelor of Business Administration degree offered through the Terry College of Business and the Bachelor of Science degree offered through the Franklin College of Arts and Sciences. The goal of the Certificate is to prepare students for an actuarial career. In today's complex world, actuaries apply mathematical models to improve decisions making under uncertainty. While most actuaries work for insurance companies, the actuarial approach to model and manage risk has been widely adopted by other industries. The focus of the Certificate is on analytical problem solving skills. The Certificate will not be restricted to specific majors (e.g., statistics) but will instead be open to all University of Georgia students.

The Certificate requires the completion of three core courses covering probability theory, actuarial modeling of cash flows and annuities, and an introduction to Risk Management and Insurance (9 hours), and the completion of at least two elective course sequences consisting of two courses each (12 hours). The Certificate will be administered by the Department of Insurance, Legal Studies, and Real Estate ("ILSRE") in the Terry College of Business. Applicants to the program must be degree-seeking at the University of Georgia and must be able to simultaneously satisfy the requirements of the program while completing their College/School elective requirements.

Mr. Jere W. Morehead  
April 2, 2012  
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No additional costs will be incurred in implementing the program. All but one of the necessary courses already exist, and sufficient faculty are present to administer the complete curriculum. Moreover, existing library and computer holdings are adequate to support the program and no additional instructional resources or physical facilities are necessary either now or in the foreseeable future.

If you have any questions, please do not hesitate to let me know. We are very excited about this opportunity, which has strong support from both faculty and students.

Sincerely,



Robert T. Sumichrast, Dean

\abg


Enclosure




**Proposal for a  
Certificate in Actuarial Science**

**Submitted by the  
Terry College of Business**

Signatures:

  
\_\_\_\_\_  
Robert E. Hoyt, Head  
Insurance, Legal Studies and Real Estate

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Robert T. Sumichrast, Dean  
Terry College of Business

  
\_\_\_\_\_  
Date

## **Proposal for: Certificate in Actuarial Science**

### **I. Basic Information**

1. Institution: University of Georgia  
Date: March 14, 2012
2. School/College: Terry College of Business
3. Department/Division: Insurance, Legal Studies, and Real Estate
4. Level: Undergraduate
5. Proposed starting date for program: Spring 2013
6. Abstract of the program:

The Certificate in Actuarial Science (Certificate) is designed to complement the Bachelor of Business Administration degree offered through the Terry College of Business and the Bachelor of Science degree offered through the Franklin College of Arts and Sciences. The goal of the Certificate is to prepare students for an actuarial career. In today's complex world, actuaries apply mathematical models to improve decisions making under uncertainty. While most actuaries work for insurance companies, the actuarial approach to model and manage risk has been widely adopted by other industries. The interdisciplinary coursework of the Certificate will cover the necessary quantitative foundations in probability theory and statistics, the basics of economics, loss models and risk management, as well as the institutional details of the insurance industry. The focus of the Certificate is on analytical problem solving skills. The Certificate will not be restricted to specific majors (e.g., statistics) but will instead be open to all University of Georgia students.

The Certificate requires the completion of three core courses covering probability theory, actuarial modeling of cash flows and annuities, and an introduction to risk management and insurance (9 hours), and the completion of at least two elective course sequences consisting of two courses each (12 hours). Possible electives cover the areas of economics, corporate finance, investments, statistics, econometrics, and insurance. A minimum grade of C is required in the three core courses.

The Certificate will be administered by the Department of Insurance, Legal Studies, and Real Estate ("ILSRE") in the Terry College of Business. Risk Management and Insurance faculty member Thomas R. Berry-Stoelzle will supervise implementation and administration of the program.

Applicants to the program must be degree-seeking at the University of Georgia and must be able to simultaneously satisfy the requirements of the program while completing their college/school elective requirements. While in the process of completing the last coursework for the Certificate, a student must complete and sign the Actuarial Science

Certificate Program completion form. Once all requirements have been satisfied, the Registrar's Office will be notified to place the Certificate in Actuarial Science notation on the student's transcript.

No additional costs will be incurred in implementing the program. All but one of the necessary courses already exist, and sufficient faculty are present to administer the complete curriculum. Existing library and computer holdings are adequate to support the program and no additional instructional resources or physical facilities are necessary either now or in the foreseeable future.

7. Letters of Support – See Appendix

Department of Mathematics, Franklin College of Arts and Sciences

Department of Statistics, Franklin College of Arts and Sciences

Department of Banking and Finance, Terry College of Business

Department of Economics, Terry College of Business

## II. Criteria for Certificate in Actuarial Science

### 1. Purpose and Objectives of the Program

#### A. Purpose and Educational Objectives of the Program

The purpose of the program is to prepare students for an actuarial career. The program will offer students the opportunity to develop the necessary knowledge and skills. In today's complex world, actuaries apply mathematical models to improve decisions making under uncertainty. While most actuaries work for insurance companies, the actuarial approach to model and manage risk has been widely adopted by other industries. The interdisciplinary coursework of the Certificate will cover the necessary quantitative foundations in probability theory and statistics, the basics of economics, loss models and risk management, as well as the institutional details of the insurance industry.

Thus, the primary educational objective of the Certificate in Actuarial Science program is to provide the foundation for a lifetime of analytical problem solving.

#### B. The Interdisciplinary Nature of the Program

Students pursuing the Certificate will have to take required courses offered through two different departments in two different colleges: The Department of Statistics in the Franklin College of Arts and Sciences, and the Department of Insurance, Legal Studies, and Real Estate in the Terry College of Business. The

list of elective courses for the Certificate includes courses offered through two additional departments: The Department of Banking and Finance and the Department of Economics in the Terry College of Business. Necessary prerequisites for the coursework of the Certificate include courses offered through the Department of Mathematics and the Department of Computer Science in the Franklin College of Arts and Sciences, and courses offered through the J.M. Tull School of Accounting and the Department of Management Information Systems in the Terry College of Business.

## **2. The Need for the Program**

- A. Demand for this program is entirely student-driven. Over the past ten years, the number of students expressing interest in becoming an actuary has steadily increased. Unfortunately, by the time students start talking to the faculty about their interest in an actuarial career, the students are usually in their junior or senior year, and by then it is too late to include the necessary coursework in their plan of study. An additional obstacle is that no department within the University of Georgia currently offers a course in actuarial modeling of cash flows and annuities. Without coursework covering the basis of actuarial science, it is nearly impossible for students to get an entry-level job in the actuarial field. The proposed Certificate is designed to address these two issues by offering the much-needed course in compound interest and annuities (RMIN 4100), and by providing a formal structure for the already existing courses. The formal structure of a certificate program will make it possible to reach out to students, directly or via their student advisors, right when the students start their studies at the University of Georgia. With information about the actuarial career track available at such an early point in time, students will be better equipped to make informed choices about their plan of study.

The demand for students with rigorous actuarial training has been strong for years, regardless of recent economic conditions. Atlanta has become the risk management and insurance center in the southeast; many insurance companies and financial services firms have their headquarters or a major regional office in Atlanta. Thus, the demand for actuarial graduates in the Atlanta area is especially high. The outstanding reputation of the Risk Management and Insurance Program in the Terry College of Business and its established alumni network will further facilitate job placement of students graduating from the University of Georgia with a Certificate in Actuarial Science.

During the planning phase of the proposed Certificate, peer and aspirant institutions were surveyed for similar programs. A number of these institutions offer complete majors in actuarial science (e.g., Pennsylvania State University, University of Illinois at Urbana-Champaign, University of Texas at Austin, University of Wisconsin-Madison). While a new major in actuarial science is unrealistic to implement given current resource restrictions, the introduction of a Certificate program would provide students with the necessary knowledge and

skills to be marketable for entry-level actuarial positions. Once employed, the new young professionals can continue on their actuarial career path and study towards one of the professional designations of either the Society of Actuaries or the Casualty Actuarial Society.

**B. Required information:**

1. Semester/Year of Program Initiation: Spring 2013
2. Semester/Year Full Implementation of Program: Spring 2013
3. Semester/Year First Certificates will be awarded: Spring 2013
4. Annual Number of Graduates expected (once the program is established): It is anticipated that a number of students, especially business majors, statistic majors and mathematic majors, will seek a Certificate in Actuarial Science. Due to course prerequisites, however, it is estimated that only a small number of students (approximately 5-10) would earn a Certificate in the first year. After three years the program will be established, graduating approximately 20-30 students per year.
5. Projected Future Trends for number of students enrolled in the program: Given (1) the outstanding reputation of the Risk Management and Insurance Program in the Terry College of Business and its established alumni network, and (2) the attractiveness of the actuarial profession (a 2010 *Wall Street Journal* article on finding “good jobs” ranked being an actuary the best job), we expect that the number of annual graduates will increase over time, eventually totaling at least 50 students per year.

**3. Student Demand**

- A. For a number of years, the Department of Insurance, Legal Studies, and Real Estate in the Terry College of Business, the Department of Statistics and the Department of Mathematics in the Franklin College of Arts and Sciences have received an increasing number of requests from students who are interested in coursework preparing them for a career as an actuary. This Certificate will give students the opportunity to acquire the knowledge and analytical problem solving skills that are necessary for an actuarial career. This will be accomplished within the framework of a formalized certificate program.
- B. Minority student enrollment in the actuarial science certificate program is projected to approximate the proportion of minority students in the total student body.

**4. Design and Curriculum**

Students must be degree seeking at the University of Georgia and must be able to simultaneously satisfy the requirements of the Actuarial Science Certificate Program while completing their college/school elective requirements.



### **Program Requirements**

Students must take a minimum of 21 hours. A minimum grade of C (2.00) is required in the three core courses (Part I). Note that the three course sequence MATH 2250 Calculus I for Science and Engineering, MATH 2260 Calculus II for Science and Engineering, and MATH 2500 Multivariable Calculus is a prerequisite for the required core course STAT 4510 Mathematical Statistics. For a complete list of prerequisites of the required courses and elective course sequences, see Exhibit 1.

#### **Part I – Required Core Courses (9 Hours):**

RMIN 4000 Risk Management and Insurance

RMIN 4100 The Theory of Interest

STAT 4510 Mathematical Statistics I

#### **Part II – Choose Two Course Sequences from the Following (12 Hours):**

##### **Sequence 1:**

ECON 2105 Principles of Macroeconomics

ECON 2106 Principles of Microeconomics

##### **Sequence 2:**

FINA 3000/3001 Financial Management

##### **And One Course from the Following:**

FINA 4200 Corporate Finance Theory

FINA 4201 Corporate Finance Valuation for Non-Finance Majors

FINA 4310 Survey of Investments

##### **Sequence 3a (cannot be combined with Sequence 3b):**

STAT 4230 Applied Regression Analysis

STAT 4280 Applied Time Series Analysis

##### **Sequence 3b (cannot be combined with Sequence 3a):**

ECON 4010 Intermediate Microeconomics

ECON 4750 Introduction to Econometrics

##### **Sequence 4:**

RMIN 4800 Internship in Risk Management and Insurance (6 hours)

##### **Or Choose Two Courses from the Following:**

RMIN 4800 Internship in Risk Management and Insurance (3 hours)

RMIN 5100 Commercial Property and Liability Insurance

RMIN 5110 Employee Benefits

RMIN 5510 Life Insurance

RMIN 5570 Insurer Operations and Policy

With the exception of RMIN 4100 – The Theory of Interest, no new courses must be developed to implement the certificate program. RMIN 4100 will cover actuarial

modeling of cash flows and annuities. The new RMIN 4100 is currently in the course approval process in the Terry College of Business.

A number of peer and aspirant institutions offer complete majors in actuarial science (e.g., Pennsylvania State University, University of Illinois at Urbana-Champaign, University of Texas at Austin, University of Wisconsin-Madison). A copy of the curriculum of the actuarial science major (“Major”) offered by the Smeal College of Business at Pennsylvania State University is attached hereto as Exhibit 2. The curriculum of the Certificate has a similar structure as the Major; the Major simply requires additional coursework. For example, the Major requires an additional course in linear algebra (MATH 220 Matrices), requires two additional core actuarial courses (R M 411 - Actuarial Mathematics I and R M 412 - Actuarial Mathematics II), requires courses that are listed as electives in the Certificate’s curriculum (e.g., R M 430 - Life and Health Insurance, FIN 305 - Financial Management of the Business Enterprise, FIN 408 - Financial Markets and Institutions). While a new major in actuarial science is unrealistic to implement at the University of Georgia in the near term due to current resource restrictions, the introduction of a Certificate program would provide students with the necessary knowledge and skills to be marketable for entry-level actuarial positions.

**5. Faculty Resources**

No additional faculty will be necessary to implement the proposed Certificate program. With the exception of RMIN 4100 – The Theory of Interest, all of the courses necessary for the proposed Certificate program are currently being offered, and the Terry College of Business and the Departments of Statistics and Mathematics in the Franklin College of Arts and Sciences have sufficient core and affiliate faculty to support this certificate program.

The full-time statistics faculty who currently teach the STAT 4510 course included as a required course within the certificate proposal are detailed below:

<b>Name &amp; Rank</b>	<b>Degree</b>	<b>Academic Specialty / Background</b>	<b>Special Qualifications</b>
Jeongyoun Ahn, Assistant Professor	Ph.D.	Statistics	Teaches STAT 4510, scholarly article publications and conferences on high dimension low sample size problems and statistical learning
Cheolwoo Park, Associate Professor	Ph.D.	Statistics	Teaches STAT 4510, scholarly article publications and conferences on multiscale analysis, nonparametric function estimation and statistical learning

The full-time risk management and insurance faculty who currently teach the RMIN 4000 course included as a required course within the certificate proposal are detailed below:

<b>Name &amp; Rank</b>	<b>Degree</b>	<b>Academic Specialty / Background</b>	<b>Special Qualifications</b>
Jennifer Atkinson, Lecturer	BBA	Risk Management and Insurance	Teaches RMIN 4000, 16+ years of insurance industry experience in major marketplaces including New York, London, Bermuda and Atlanta, GA
Thomas Berry-Stoelzle, Assistant Professor	Ph.D.	Risk Management and Insurance	Teaches RMIN 4000, Fellow of the German Actuarial Association, scholarly article publications and conferences on corporate risk management, insurance company operations, and insurance economics
James Carson, Daniel P. Amos Distinguished Professor of Insurance	Ph.D.	Risk Management and Insurance	Teaches RMIN 4000, scholarly article publications and conferences on risk management, life insurance, and insurance company operations
James Hilliard, Assistant Professor	Ph.D.	Risk Management and Insurance	Teaches RMIN 4000H, scholarly article publications and conferences on insurance capital structure, insurance distribution and compensation, and insurance market structure
Steven Pottier, Associate Professor	Ph.D.	Risk Management and Insurance	Teaches RMIN 4000, scholarly article publications and conferences on insurer efficiency, insurer financial strength, and insurer insolvency

The new RMIN 4100 – The Theory of Interest course, included as a required course within the certificate proposal, will be offered once a year and taught by Thomas Berry-Stoelzle. As a Fellow of the German Actuarial Association, Thomas Berry-Stoelzle is familiar with the actuarial profession and the exam process for actuarial professional designations. The Insurance, Legal Studies, and Real Estate Department in the Terry College of Business has sufficient core and affiliate faculty to

offer this additional course.

Thomas R. Berry-Stoelzle will serve as the director of the Certificate. Program administration will be coordinated in conjunction with program faculty who will give curricular and program guidance.

No adjustments will be required to any of the involved faculty members' current assignments.

## **6. Library, Computer and Other Resources**

### **A. Library Resources**

Existing library holdings are sufficient to support the Certificate program. No improvements to library resources are needed.

### **B. Computer Resources**

Existing computer, instructional, and laboratory equipment are sufficient to support the Certificate program. No improvements in these support areas are needed.

## **7. Physical Facilities**

Existing building, classroom, and office space are sufficient to support the Certificate program. No additional facilities are needed.

## **8. Expenses to the Institution for Full Program Implementation**

The Terry College of Business and the Departments of Mathematics and Statistics in the Franklin College of Arts and Sciences currently provide the personnel and operating resources necessary to implement the Certificate program. No additional funding is needed. No student fellowships, assistantships, or scholarships are required beyond those already provided. In fact, the existence of the Certificate program may create opportunities to attract new financial support from industry partners.

## **9. Financial Support Commitments Needed to Initiate and Fully Develop the Program**

No additional funds are needed to support the Certificate program.

No new or expanded facilities will be necessary to support the Certificate program either now or in the foreseeable future.

## **10. Administration of the Program/Admission and Retention of Participants**

The actuarial science certificate program will be administered through the Department of Insurance, Legal Studies, and Real Estate within the Terry College of Business,

where sufficient staff support is available. Risk Management and Insurance faculty member Thomas Berry-Stoelzle will serve as the director of the Certificate and supervise its implementation and administration.

The Certificate program will be open to all students at the University. Students will be asked to complete an application for admission. Applicants to the program must be degree-seeking at the University of Georgia and must be able to simultaneously satisfy the requirements of the program while completing their college/school elective requirements. While in the process of completing the last coursework for the Certificate, a student must complete and sign the Actuarial Science Certificate Program completion form. Once all requirements have been satisfied, the Registrar's Office will be notified to place the Certificate in Actuarial Science notation on the student's transcript. In the event that student demand exceeds the number of seats available in the required courses, the application may serve as a selection tool, and a GPA cut-off may be implemented. A minimum grade of C (2.00) is required in the three core courses.



## **EXHIBIT 1**

### **List of Prerequisites of Required Courses and Elective Course Sequences**

**Prerequisites for Required Courses:**

MATH 2250	Calculus I for Science and Engineering (prerequisite: MATH 1113 or permission of department)
MATH 2260	Calculus II for Science and Engineering (prerequisite: MATH 2250)
MATH 2500	Multivariable Calculus (prerequisite: MATH 2260)

**Prerequisites for Elective Sequence 1:**

None.

**Prerequisites for Elective Sequence 2:**

ACCT 2101	Principles of Accounting I
CSCI 1100 or MIST 2090	Introduction to Personal Computing Introduction to Information Systems in Business

**Prerequisites for Elective Sequence 3a:**

STAT 2000 or MSIT 3000	Introductory Statistics Statistical Analysis for Business I (prerequisite: ACCT 2101 and (CSCI 1100 or MIST 2090))
STAT 4210	Statistical Methods (prerequisite: STAT 2000 or MSIT 3000 or STAT 3000)

**Prerequisites for Elective Sequence 3b:**

ECON 2105	Principles of Macroeconomics (no prerequisites)
ECON 2106	Principles of Microeconomics (no prerequisites)
STAT 2000 or MSIT 3000	Introductory Statistics Statistical Analysis for Business I (prerequisite: ACCT 2101 and (CSCI 1100 or MIST 2090))
MATH 2250	Calculus I for Science and Engineering (prerequisite: MATH 1113 or permission of department)

**Prerequisites for Elective Sequence 4:**

RMIN 4000	Risk Management and Insurance (no prerequisites)
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**EXHIBIT 2**

**Smeal College of Business, Pennsylvania State University:  
Curriculum for Actuarial Science Major**

## Actuarial Science (ACTSC) Degree Requirements -- Program Year 2012

The degree requirements outlined below are based on course adjustments made during the 2011-12 academic year. The Smeal College will adjust degree audits to reflect these changes so students can properly monitor their progress towards degree completion.

1. Take the following Mathematics courses (14 credits) - *Grade of "C" or higher is required in MATH 140 and MATH 141.*
  - a. MATH 140 (4) Calculus with Analytic Geometry I
  - b. MATH 141 (4) Calculus with Analytic Geometry II
  - c. MATH 220 (2) Matrices
  - d. MATH 230 (4) Calculus and Vector Analysis
  
2. Take the following Insurance (Risk Management) courses (9 credits) - *A grade of "C" or higher is required.*
  - a. R M 301 (3) Risk and Decisions
  - b. R M 320W (3) Risk Management and Insurance [Prerequisite: R M 301]
  - c. R M 430 (3) Life and Health Insurance [Prerequisite: R M 320W]
  
3. Select one of the following Insurance (Risk Management) Courses (3 credits) - *A grade of "C" or higher is required.*
  - a. R M 420 (3) Property and Casualty Insurance [Prerequisite: R M 320W]
  - b. R M 401 (3) Fundamentals of Private Pensions [Prerequisite: R M 320W]
  
4. Take the following Actuary courses (9 credits) - *A grade of "C" or higher is required.*
  - a. R M 410 (3) Compound Interests and Annuities [Prerequisite or Concurrent: STAT (MATH) 141; Prerequisite: R M 301]
  - b. R M 411 (3) Actuarial Mathematics I [Prerequisite: R M 410; STAT (MATH) 414]
  - c. R M 412 (3) Actuarial Mathematics II [Prerequisite: R M 411]
  
5. Take the following Statistics courses (6 credits)
  - a. STAT (MATH) 414 (3) Introduction to Probability Theory
  - b. STAT (MATH) 415 (3) Introduction to Mathematical Statistics
  
6. Select 3 credits from the Department List (3 credits)
  - a. FIN 305 (3) Financial Management of the Business Enterprise
  - b. FIN 408 (3) Financial Markets and Institutions
  - c. R M 415 (3) Modeling for Actuarial Science (*spring semester only*)

**Smeal College of Business Recommended Academic Plan (Sample Schedule)**  
**Program Year 2012 (Students entering their major Summer/Fall 2012 at University Park)**

*actual sequence/selection will vary*

**Actuarial Science (ACTSC) Effective Summer 2010**

Please see Department Notes course changes and adjustments

Actuarial Science is an academically controlled major. Please refer to our [Entrance to Major Requirements](#) for further details.

1 <sup>st</sup> SEMESTER		Credits	2 <sup>nd</sup> SEMESTER		Credits
PSU 006 – First Year Seminar		1	§ MGMT 301 – Basic Management Concepts		3
§ ENGL 015 or 030 (GWS) - Composition		3	§ SCM 200 or STAT 200 (GQ) – Statistics		4
§ MATH 140 (GQ) – Calculus and Analytic Geometry I		4	§ MATH 141 – Calculus and Analytic Geometry II		4
§ ECON 102 (GS) - Microeconomics		3	Natural Science (GN)		3
Foreign Language 002		4	Foreign Language 003		4
	<b>TOTAL</b>	<b>15</b>		<b>TOTAL</b>	<b>18</b>
3 <sup>rd</sup> SEMESTER		Credits	4 <sup>th</sup> SEMESTER		Credits
§ MKTG 301 – Principles of Marketing		3	§ FIN 301 – Corporation Finance		3
§ ACCTG 211 – Financial/Managerial Accounting		4	SCM 301 – Supply Chain Management or ENGL 202D (GWS) – Business Writing		3
Natural Science (GN)		3	CAS 100 (GWS) – Speech Communication		3
MATH 220 – Matrices		2	MATH 230 – Calculus and Vector Analysis		4
ECON 104 – Macroeconomics or General Education (GH/GS/GA)		3	STAT (MATH) 414 – Probability Theory or General Education (GA/GH/GS)		3
	<b>TOTAL</b>	<b>15</b>		<b>TOTAL</b>	<b>16</b>
5 <sup>th</sup> SEMESTER		Credits	6 <sup>th</sup> SEMESTER		Credits
R M 301 – Risk and Decisions		3	R M 320W – Risk Management and Insurance		3
R M 410 – Compound Interests and Annuities		3	R M 411 – Actuarial Mathematics I		3
ENGL 202D (GWS) – Business Writing or SCM 301 – Supply Chain Management		3	General Education (GH/GS/GA) or ECON 104 - Macroeconomics		3
General Education (GA/GH/GS) or STAT (MATH) 414 – Probability Theory		3	STAT (MATH) 415 – Mathematical Statistics		3
MIS 204 – Business Information Systems		3	B A 342 – Business Ethics		3
B LAW 341 – Business Law I		3	Health Science/KINES (GHA)		1.5
	<b>TOTAL</b>	<b>18</b>		<b>TOTAL</b>	<b>16.5</b>
7 <sup>th</sup> SEMESTER		Credits	8 <sup>th</sup> SEMESTER		Credits
B A 411 – Analyzing Business and Industry		3	R M 420 – Property and Casualty Insurance or R M 401 – Fundamentals of Private Pensions		3
R M 430 – Life and Health Insurance		3	Related Area – See Department List		3
R M 412 – Actuarial Mathematics II		3	Natural Science (GN)		3
Health Science/KINES (GHA)		1.5	General Education (GA/GH/GS)		3
General Education (GA/GH/GS)		3	Elective		3
General Education (GA/GH/GS)		3			
	<b>TOTAL</b>	<b>16.5</b>		<b>TOTAL</b>	<b>15</b>

Courses in **Bold** require a grade of 'C' or higher.

Courses in *Italics* satisfy general education and degree requirements.

§ -Entrance-to-Major Requirement

**Advising Notes:**

- It is highly recommended that students at University Park take SCM 301 in their 4<sup>th</sup> semester.
- It is highly recommended that students at campuses that do not offer SCM 301 take ENGL 202D in their 4<sup>th</sup> semester.
- GWS, GQ, GA, GH, GS, and GHA are codes used to identify General Education requirements.
- US, IL, and US;IL are codes used to designate courses that satisfy University United States/International Cultures requirements. All students are required to take one IL and one US course before graduation. A course designated as US;IL may be used as a US OR an IL, not both.
- W suffix signifies the course satisfies the University *Writing Across the Curriculum* requirement.



**Department Notes for the Actuarial Science (ACTSC) major:**

The Insurance and Real Estate Department, home to the Actuarial Science major, has been approved for reorganization effective July 1, 2011. The department name has been changed to The Department of Risk Management (R M) along with the introduction of a new major, course additions and course changes. The following bullets will assist students in navigating through these changes towards degree fulfillment in the Actuarial Science degree and towards preparation for the professional actuarial exams:

- Course prefix changes from Insurance (INS) to Risk Management (R M) are occurring over the 2011-12 academic year. Follow the notes below to properly schedule the proper course for the ACTSC major.
- R M 301 & R M 320W replace INS 301 & INS 310W as degree requirements.
- R M 301 is only offered during the fall semester and should be taken during junior year.
- R M 320W is only offered during spring semester and should be taken should be taken during junior year.
- R M 410 and R M 412 are offered in the fall semester only. These courses replace INS 410 and INS 412.
- R M 411 is offered in the spring semester only and replaces INS 411.
- R M 430 replaces INS 320 starting Fall 2012.
- INS 401 is replaced with either R M 420 or R M 401 depending on the student's area of actuarial interest.
- Students pursuing an actuarial career should take all the VEE courses listed in <http://www.soa.org/education/exam-req/edu-asa-req.aspx> before graduation. The Actuarial Science degree requirements meet the VEE requirements for Corporate Finance and Economics, but not for Applied Statistics. Students must earn a B- or better in all VEE courses.
- Students should take MATH 230 and STAT (MATH) 414 before the 5<sup>th</sup> semester, in order to sit for the Society of Actuaries Probability Exam as quickly as possible. Math 220 can be delayed into the junior year (if desired) in order to take STAT 414.

**APPENDIX**  
**Letters of Support**



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# The University of Georgia

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*Department of Statistics*

March 19, 2012

RE: Proposal for a Certificate in Actuarial Science

To Whom It May Concern:

Through this letter, I would like to offer enthusiastic support for the proposed Certificate in Actuarial Science. I anticipate that the proposed Certificate Program, if approved, will be of great interest to a significant number of undergraduate statistics majors and co-majors. Actuaries need to have a strong background in statistics and mathematics, and actuarial science has therefore always offered an interesting avenue into the job market for statistics students.

Based on the 2010-2011 Occupational Outlook Handbook from the US Bureau of Labor Statistics, the median annual wage for actuaries was \$84,810 in 2008. Moreover, while it is a very competitive field, the number of jobs for actuaries was expected to grow much faster than the average for all occupations over the period 2008-2018. The Certificate Program will place UGA students a much better position to compete successfully for this growing number of jobs.

Finally, there is an urgent nationwide call, which is echoed in the state of Georgia and at UGA, to increase the number of US students in the STEM disciplines. While not its main focus, the Certificate Program can potentially make a small contribution to this by drawing more students to the mathematical sciences. For example, the exposure that students receive to statistics courses through this program may, in a few instances, spark their interest in additional statistics courses than those that are part of the program. There is ample evidence that recognizing the practical value of some tools provides a strong incentive to expand one's knowledge of related tools.

I look very much forward to this Certificate Program becoming an option for our students, and respectfully but strongly urge you to approve this proposal.

Sincerely yours,

John Stufken  
Professor and Head  
Department of Statistics



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# The University of Georgia

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*Christopher Cornwell*  
*Professor of Economics &*  
*Department Head*

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23 March 2012

To whom it may concern:

I am writing to express my enthusiastic support for the proposed certificate program in Actuarial Science.

The benefits of such a program are clear. Students completing the certificate will be trained for technical challenging actuarial and risk management jobs, and consequently, will be in high demand. The costs are negligible. The interdisciplinary nature of the program will allow the certificate to be offered at the margin of existing courses across several departments. Economics is pleased to be one of those departments and prepared to accommodate certificate students in the relevant courses. I predict that many of our more quantitatively oriented students will find the program to be an attractive complement to their economics studies.

I strongly encourage you to approve this proposal. It will be a great enhancement to the university's undergraduate program and add an appealing dimension to the offerings of the participating departments.

Sincerely,

Christopher Cornwell  
Professor and Head



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# The University of Georgia

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Jeffry M. Netter  
C. Herman and Mary  
Virginia Terry Chair  
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March 20, 2012

Re: Proposal for a certificate in actuarial science

To Whom it may Concern

I express my very strong support for the proposed certificate in Actuarial Science.

While the finance department only has a support role in the proposed program, I believe there is a significant demand from UGA students for such a certificate and UGA is very prepared to offer a strong program. I will leave the details of the proposal to others. However, we often get inquiries about whether finance offers such a program or asking for permission on a case by case basis to take our major classes by students working out their own program. A certificate would be a much more organized and efficient method of providing students with access to Actuarial Science.

Further, the excellent mathematics, statistics, and Terry college departments can offer high quality classes to the students seeking the Certificate. To Finance there would be no resource implications (other than more students in some of our classes). We would not offer any new classes just allow Actuarial Science students into our relevant existing classes.

Further, the certificate would be open to Finance students, which for a certain set would significantly increase their marketability. In addition, I think it would be a very good experience for our finance students to have students, highly skilled in math and statistics, in some of our finance classes. It would raise the level of the class, benefitting all students.

I urge you to support this proposal. Please contact me if I can provide any further information.

Sincerely,

Jeffry M. Netter  
Department Head Banking and Finance





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# The University of Georgia

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Department of Mathematics

March 20, 2012

**To whom it may concern:**

We in the Mathematics Department are pleased to endorse the interdisciplinary certificate program in Actuarial Science. Actuarial jobs have been and continue to be one of the highest-ranked and most well-paid professions. For the last twenty years many mathematics majors have gone into the actuarial profession. One of our graduating seniors was a driving force who arranged with the Economics and Finance department heads for mathematics majors to have access to a number of the courses now listed in the certificate program. It will be a great help to our majors in finding jobs to complete the certificate program (including the possibility of earning academic credit for an internship with an insurance company).

Future actuaries need to develop analytical thinking and problem solving skills. Therefore, mathematics continues to be a strong element in their preparation. Although mathematics coursework appears only as prerequisites for the actuarial certificate, we are confident that at least 20% of our majors will be interested in completing the certificate.

We hope that you will endorse this certificate program. Please let me know if I can provide further information.

Sincerely yours,

Malcolm R. Adams

Department Head, Mathematics