FORM A
Board of Regents, State of Iowa

REQUEST TO IMPLEMENT A NEW
BACCALAUREATE, MASTERS, DOCTORAL, OR
FIRST PROFESSIONAL DEGREE PROGRAM
August 24, 2017

THE PURPOSE OF ACADEMIC PROGRAM PLANNING: Planning a new academic degree program provides an opportunity for a Regent university to demonstrate need and demand as well as the university's ability to offer a quality program that is not unnecessarily duplicative of other similar programs offered by colleges and universities in Iowa.

Institution: Iowa State University

CIP Discipline Specialty Title: Actuarial Science

CIP Discipline Specialty Number (six digits): XXXXXXXXXXXX

Level: Bachelors

Title of Proposed Program: Major in Actuarial Science

Degree Abbreviation (e.g., B.S., B.A., M.A., Ph.D.): B.S.

Approximate date to establish degree: Month: August Year: 2018

Contact person: (name, telephone, and e-mail)

Dr. Rahul A. Parsa, 515-243-2593, raparsa@iastate.edu

College that will administer new program: Students majoring in Actuarial Science will be College of Business students and they will get a degree in business. The College of Business will partner with the Departments of Mathematics and Statistics in the College of Liberal Arts and Sciences to offer and manage the courses for the portion of the curriculum directly related to actuarial science.

Please provide the following information (use additional pages as needed). Do not use acronyms without defining them.

1. Describe the proposed new degree program, including the following:

   a. A brief description of the program. If this is currently being offered as a track, provide justification for a standalone program.

      The proposed major in actuarial science will provide the initial training for students to become an actuary. According to the Society of Actuaries (SOA) website (https://www.soa.org/future-actuaries/what-is-an-actuary/),

      "Actuaries measure and manage risk. Actuaries have a deep understanding of mathematics, statistics and business management. With this, they help businesses grow and provide value to their customers. Actuaries help leaders make strategic decisions and consumers prepare for their future.

      Actuaries are in demand. They work for and with businesses with a financial focus. Businesses including insurance-life, health, property-casualty, even pet insurance. Also, banking, investments, government, energy, e-commerce, marketing, employee benefits, product development, enterprise risk management, predictive analytics, consulting and more."

      No program currently exists at Iowa State University that provides the full set of coursework desired by industry. The Departments of Mathematics and Statistics currently offer some of the courses needed to become an actuary, but students majoring in either of these two disciplines don't get the business background that is also desired by industry (see comments from employers in Appendix A). Insurance products are by definition financial products that are sold and as such, actuaries need knowledge of accounting concepts, finance and financial investments, marketing concepts, etc. Currently, the only way a student can get this business knowledge is to add a double major in business, which is costly and time consuming. Creating an actuarial science major within the College of Business would eliminate this problem. In addition, several courses needed to provide the knowledge necessary to pass the preliminary exams given by the Society of Actuaries (SOA) and the Casualty Actuarial Society (CAS) are not currently taught at Iowa State University. (Loss Models, Life Contingencies, Risk Management Derivatives, and Credibility Theory). These courses are part of the proposed major in actuarial science. Thus, students will be better prepared to pass the SOA and/or CAS exams, which enhances their prospects for a successful career as an actuary.

      Students majoring in actuarial science will be students of the College of Business. The admission requirements to the College and to its professional program for students wishing to major in actuarial science will be the same as for all other majors. The curriculum will require 31 credits of general education coursework, 23 credits of foundation coursework, 21 credits of supporting courses, 24 credits of core coursework, and 25 credits of major coursework (124 total credits). The general education,

foundation, supporting, and core coursework is similar to that for other majors in the College of Business. The main differences are related to different mathematics requirements to prepare the students for the SOA/CAS preliminary exams. The 25 credits of major coursework are specific to the actuarial science major. This curriculum can be completed in eight semesters (four years). Complete details of the curriculum can be found in Appendix B. A sample four year plan can be found in Appendix C.

The curriculum for the major specific courses and for the supporting courses may change over time as changes are made to the preliminary exams by the Society of Actuaries and the Casualty Actuarial Society. The College of Business will partner with the Department of Mathematics and the Department of Statistics, both of whom are in the College of Liberal Arts and Sciences, to monitor these requirements and to adjust the curriculum as needed.

To achieve professional status as an actuary, individuals must pass the SOA/CAS preliminary exams and satisfy Validation by Education Experience (VEE) requirements. Three of these VEE requirements can be satisfied through the two economics courses, and one of the accounting courses taken for the major. The remaining requirements can be satisfied by taking three additional courses totaling 10 credits (one VEE course in finance, one in statistics, and one prerequisite course in mathematics). While these 10 credits of coursework are not required for the major, students will be encouraged to take these courses while a student at Iowa State University. Even with these additional courses, it is still possible to complete the program in eight semesters (four years). A sample four year plan with these VEE courses is shown in Appendix D.

b. A statement of academic objectives;

The academic objectives of the program are twofold. First, students will acquire the knowledge base and skills in finance, mathematics, and statistics needed to pass the five preliminary actuarial exams. Second, students will acquire the business-related skills that are needed to be successful on the job when they become actuaries. These include the ability to: understand how a business is organized and functions, communicate effectively in written, oral, visual, and electronic modes, work in teams, make ethical choices, use quantitative and analytical methods to address unstructured business problems, think critically, understand financial statements, and understand markets and investments.

c. What the need for the program is and how the need for the program was determined;

Actuarial jobs rank among the top five best jobs in the U.S. They are also one of the best paying jobs. Actuaries are primarily employed in the insurance industry, although banking, investments, government, and other similar entities employ actuaries as well. Actuaries are in high demand. Des Moines is the second largest insurance center in the U.S. It is home to several major insurance companies, representing some of the largest employers in Iowa. The need for a program came into focus through discussions that Dean David Spalding had with some of these stakeholders. These discussions indicated that the demand for actuaries exceeded the supply currently available. In the summer of

2016, Dean Spalding appointed a task force to study the issue. The Task Force consulted with numerous members of the business community (insurance professionals and actuaries) to seek their input. The feedback was very positive and constructive. There was overwhelming enthusiasm that ISU should offer a comprehensive actuarial science program and that it should be part of a broad-based business education housed in the College of Business. In fact, professional actuaries repeatedly stressed to the Task Force the strong desirability of developing business-related knowledge and skills along with the ability to pass the actuarial exams.

d. The relationship of the proposed new program to the institutional mission and how the program fits into the institution's and college's strategic plan;

The Departments of Mathematics and Statistics currently offer courses to help prepare students for careers as actuaries. However, students majoring in these two disciplines do not get the broad based business knowledge industry is asking for. Currently, the only way to obtain that depth of knowledge is to get a double major in mathematics or statistics and business. This is time consuming and costly for the students and is not very efficient. In addition, some courses needed to provide the education required to pass the preliminary SOS/CAS exams are not currently offered.

Creating a major in actuarial science within the College of Business and partnering with the Departments of Mathematics and Statistics to offer the courses needed from those departments will solve these problems. All students will take the business foundation, supporting, and core courses to give them the broad based business background desired. They will also take courses in the major in finance, mathematics, and statistics to prepare them to pass the SOA/CAS preliminary exams. The courses needed to pass the preliminary exams that are not currently offered will be developed.

The College of Business offers high-quality undergraduate, masters, and doctoral level programs, and has a number of nationally recognized research scholars and a strong research reputation in selected fields. The addition of this bachelor's level Actuarial Science program would make a significant contribution to the College's strategic goals. In fact, one of the items under Goal 1 of the College of Business' 2015-2020 strategic plan calls for "the establishment of new undergraduate majors, minors, and certificates based on industry needs." Further, one of the items under Goal 2 of the plan is to "increase the number of interdisciplinary undergraduate and graduate programs in collaboration with other colleges on campus based on industry needs and/or academic trends." The Bachelors in Actuarial Science program would further these goals by preparing students with a broad background in business and an advanced set of financial, mathematical, and statistical tools that are necessary for a successful career in actuarial science that addresses the challenges of today's complex insurance and financial sectors.

e. The relationship of the proposed new program to other existing programs at the institution; describe how the proposed program will enhance other programs at the university. Will the proposed program duplicate existing programs at the university?

The foundation, supporting, and core business classes required for the actuarial science major are already being taught in the College of Business, as are most of the finance courses required for the program. The statistics courses required are currently being taught, as are most of the required mathematics courses. Five new courses specifically needed to prepare the students for the SOA/CAS preliminary exams will need to be developed. Three of these courses will be taught by College of Business faculty in the Department of Finance and two will be taught by faculty from the Department of Mathematics. Descriptions of these new courses can be found in Appendix E. It is possible that students currently majoring in finance, mathematics, or statistics may be interested in these new courses as well.

The major in actuarial science is expected to draw additional high quality students from high schools in Iowa and other Midwestern states to study at Iowa State University. It is also expected that companies in the insurance industry will come here to recruit these high quality actuarial science students. This should enhance the reputations of the College of Business and the Departments of Mathematics and Statistics.

f. The relationship of the proposed new program to existing programs at other colleges and universities in Iowa, including how the proposed program is different or has a different emphasis than the existing programs.

The University of Iowa has an actuarial science program located in the Department of Statistics and Actuarial Science and the University of Northern Iowa has a program located in the Department of Mathematics. Both programs lack the broad based foundation in business that our conversations with the insurance industry indicated is strongly desired. Drake University in Des Moines does have an actuarial science program located in the College of Business. However, Drake University is a private university with high tuition (currently $19,458 per semester for students entering in the 2017-18 academic year), making it unaffordable for many students.

The College of Business and the Departments of Mathematics and Statistics are well-positioned to deliver high-quality actuarial science students who can complete their degree in four years of study. The College of Business has an excellent reputation with both industry and students and does well in national rankings. The Departments of Mathematics and Statistics have excellent reputations and are highly ranked as well. In all cases, most of our tenure track faculty are active researchers and continue to contribute to their field of expertise, which ensures they stay up-to-date with current trends in industry.

g. Special features or conditions that make the institution a desirable, unique, or appropriate place to initiate such a degree program.

Iowa State University is the perfect home for the proposed Bachelor of Actuarial Science program. We are close to Des Moines, which is the second largest insurance center in the United States. This creates a ready and easily accessible market for our students. The close proximity of this market makes it easy to maintain contact with the companies

hiring our students and to stay up-to-date on current changes in the industry which might affect our program. As already mentioned, the program would draw on the existing strengths of the College of Business and the Departments of Mathematics and Statistics. As indicated below, the College of Business and the Departments of Mathematics and Statistics already have most of the necessary faculty and required expertise to provide an excellent program (although some additional faculty will be required to handle growth in the program). The program fits in well with the College of Business' educational mission and with that of Iowa State University as well.

h. Are the university's personnel, facilities, and equipment adequate to establish and maintain a high quality program?

Most of the courses required for the actuarial science major already exist at Iowa State University and are being taught by highly qualified faculty in the College of Business and the Departments of Mathematics and Statistics. The College of Business hired Dr. Rahul Parsa in the fall of 2015. Dr. Parsa was formerly the Director of the Actuarial Science Program for five years at Drake University. He has over 15 years of experience in teaching actuarial science courses and was recently asked to be on the examination committee for the Casualty Actuarial Society (a position he accepted). He will be the lead faculty member for the actuarial science major.

Five new courses will be required for the Actuarial Science program, three of them will be taught by faculty in the College of Business Finance Department, and two by faculty in the Department of Mathematics. Dr. Parsa will be teaching two of the three new courses in the College of Business while the remaining College of Business course will be taught by an existing faculty member in the Department of Finance. The Department of Mathematics may need to hire a faculty member to teach the two new Life Contingency courses. This is dependent on the load of their existing faculty, which could change due to anticipated student growth at the university by the time the major is implemented and the two Life Contingency courses that are required. The Department of Mathematics has indicated their willingness to staff these courses. As demand for the actuarial science major increases, additional sections of courses may have to be opened to accommodate growth. The tuition revenue received from the program should be adequate to hire the needed faculty.

The College of Business is housed in the thirteen year old Gerdin Business Building. The Gerdin Business Building has state-of-the-art research and instructional technology. Other than faculty and classroom space, the main resources needed to teach the program are computer hardware and software. These resources are already available in the Gerdin Business Building.

i. How does student demand for the proposed program justify its development?

When our Undergraduate Recruitment Coordinator asks potential College of Business students what they would like to major in, they often mention actuarial science. High school students often inquire whether we have an actuarial science program within the

College of Business as well. In fact, on the latest PSAT Test Taker survey, interest in actuarial science has increased by 143% over the last six years. While interest in actuarial science is still lower than most other business majors, interest in the major appears to be increasing.

Enrollment in actuarial science at Drake University adds support to this information. Drake University has over 300 students in the program (almost 10% of the student body and 1/3rd of the college). Drake University is a private university with very high tuition which makes it unaffordable for many Iowa students, a group that Iowa State University predominantly serves. Iowa State University undergraduate business student tuition is among the lowest of our peers. The low cost and high quality of the proposed program at Iowa State University should make it very attractive to both in-state and out-of-state students. In addition, Dr. Rahul Parsa, who was formerly the Director of the Actuarial Science Program at Drake University played a major role in the recruitment efforts at Drake University. We believe the success he had at Drake University can be replicated at Iowa State University. Thus, we believe sufficient student demand exists to have a successful program.

2. Describe the state and/or national workforce need and/or demand for graduates of the proposed program currently and in the foreseeable future (provide documentation about the current sources of data used to estimate need and demand).

   Actuaries are highly sought after and actuarial jobs rank among the best jobs in the country. According to the Bureau of Labor Statistics, the number of jobs for actuaries in 2014 was 24,600. This demand is expected to grow by 18% over the next 10 years, bringing the total number of jobs in the U.S. for actuaries to 29,028. This far exceeds the average growth rate for all occupations of 7%. While the total number of jobs is not large, the demand for actuaries will exceed that amount due to individuals being promoted to upper level management positions or leaving actuarial jobs for opportunities elsewhere. In addition, actuarial jobs tend to be concentrated in cities such as Des Moines that have a high concentration of insurance companies.

   In order to gauge demand for this type of degree program in Iowa, we held meetings with a number of major insurance employers, most of who are in Des Moines. These employers included Athene USA, EMC Insurance Companies, Principal Financial Group, PricewaterhouseCoopers LLP, Fidelity & Guaranty Life Insurance Company, and LTCG. We outlined the proposed program and asked for their feedback on the perceived demand for such a skill set. The responses ranged from positive to enthusiastic. In fact, one company indicated they had approximately 20 open positions for actuaries at any one time.

   The company representatives we talked to were also unanimous in their opinion that future actuaries need business skills in addition to passing the exams given by the SOA/CAS, and all were in agreement that an actuarial program integrated into a business curriculum gives students the best preparation to be an actuary. From these meetings we believe the current demand for actuarial science students exceeds the supply and that an actuarial science

program within the College of Business would best prepare students for careers as actuaries (see Appendix A for more complete details of these meetings).

3. List all other public and private institutions of higher education in Iowa currently operating programs similar to the proposed new degree program. (For comparison purposes, use a broad definitional framework, e.g., such identification should not be limited to programs with the same title, the same degree designation, having the same curriculum emphasis, or purporting to meet exactly the same needs as the proposed program.) If the same or similar program exists at another public or private institution of higher education in Iowa, respond to the following questions:

   a. Could the other institution reasonably accommodate the need for the new program through expansion? Describe collaboration efforts with other institutions.

      As noted in 1f above, the University of Iowa has an actuarial science program located in the Department of Statistics and Actuarial Science and the University of Northern Iowa has a program located in the Department of Mathematics. Both programs lack the broad based foundation in business that our conversations with the insurance industry indicated is strongly desired. Given the different focus of these programs versus the program we propose, we do not believe collaboration would be worthwhile. However, if a student in our actuarial science program takes or has taken a class at either the University of Iowa or the University of Northern Iowa that is a direct substitute for one of the classes required for our program, we will allow that substitution if it meets our university and college policies for such substitutions.

      Drake University in Des Moines does have an actuarial science program located in the College of Business. However, Drake University is a private university with high tuition (currently $19,458 per semester for students entering in the 2017-18 academic year), making it unaffordable for many students. Given the private nature of Drake University, we do not believe there is any benefit to collaboration with them.

   b. With what representatives of these programs has there been consultation in developing the program proposal? Provide a summary of the response of each institution consulted.

      Dr. Rahul Parsa, the lead faculty member for the actuarial science major in the College of Business at Iowa State University, was formerly the Director of the Actuarial Science Program for five years at Drake University. He has over 15 years of experience in teaching actuarial science courses and was recently asked to be on the examination committee for the Casualty Actuarial Society (a position he accepted). He has extensive experience in the courses needed for a major in actuarial science and as a result, we did not consult any of the other programs on curriculum related issues.

   c. Has the possibility of an inter-institutional program or other cooperative effort been explored? What are the results of this study? (Consider not only the possibility of a formally established inter-institutional program, but also how special resources at other

institutions might be used on a cooperative basis in implementing the proposed program solely at the requesting institution.)

We have not explored the possibility of an inter-institutional program. Undergraduate students generally want to attend a particular institution and as a result, we do not believe there is anything to be gained from an inter-institutional program. However, if a student in our actuarial science program takes or has taken a class at either the University of Iowa or the University of Northern Iowa that is a direct substitute for one of the classes required for our program, we will allow that substitution if it meets our university and college policies for such substitutions.

d. Do other colleges in Iowa offer programs similar to the proposed program at comparable quality and cost?

As mentioned in 1f and 2a, Drake University is the only university in Iowa that offers an actuarial science program through the College of Business. Drake University is a private university with very high tuition. Thus, no other universities in Iowa offer a program similar to our proposal for the same or similar cost.

e. Are letters of support included with the program proposal?

We contacted the Department of Statistics and Actuarial Science in the College of Liberal Arts and Sciences at the University of Iowa, and the respective Deans for the College of Business Administration and the College of Humanities, Arts and Sciences at the University of Northern Iowa to ask for letters of support for our proposed major in actuarial science. These discussions are still on-going. In addition, we do have numerous letters of support from industry. We have strong letters of support for our proposed major from:

1. Christopher Littlefield, President and CEO of Fidelity & Guaranty Life Insurance Company
2. David Lyons, former Insurance Commissioner (1989-1994) and CEO and/or Board Member for several for-profit and non-profit health care and health insurance organizations in Iowa
3. Nick Gerhart, Chief Administrative Officer, FBL Financial Group, Inc., former Insurance Commissioner
4. Susan Voss, VP/General Counsel, American Enterprise Group, former Insurance Commissioner
5. Bruce Kelley, President and CEO, EMC Insurance
6. Daniel J. Houston – Chairman, President, and CEO, Principal Financial Group

Copies of these letters are included in Appendix F. We also have letters of support from the Departments of Mathematics and Statistics at Iowa State University. Copies of these letters are included in Appendix G.

4. Estimate the number of majors and non-majors students that are projected to be enrolled in

the program during the first seven years of the program.

a. Undergraduate

Our proposal is for an undergraduate major in actuarial science and all students in the major would be students in the College of Business. In all actuarial science programs, some students will not be able to handle the coursework and will transfer out of the program to other programs in the university. Most of this attrition is expected to happen between the second and third year of the program. This attrition is taken into account in our estimates. As the table below shows, the program is expected to enroll approximately 170 students once steady state has been reached.

Undergraduate	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8
Total Majors	15	40	80	120	150	165	170	170
Non-Majors	0	0	0	0	0	0	0	0

b. Graduate

Since this major is for undergraduate students, no graduate students will be allowed in the program.

Graduate	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8
Majors	0	0	0	0	0	0	0	0
Non-Majors	0	0	0	0	0	0	0	0

c. What are the anticipated sources of these students?

We will actively recruit students for the major as part of our normal recruitment process for the College of Business. Details on the actuarial science major will be included in all of our marketing materials and on our website. We will also make sure that high schools, especially those in Iowa, are aware of the new major. Once we make these counselors in these schools aware of the program, we believe students will be attracted to enroll at Iowa State University. Students already at Iowa State University will also be made aware of the program. Many students change majors once they arrive at Iowa State University, primarily because they don't enjoy their initial choice of a major. For some of those students, actuarial science may be a good alternative choice.

5. If there are plans to offer the program away from the campus, briefly describe these plans, including potential sites and possible methods of delivery instruction. Will off-campus delivery require additional HLC accreditation?

We do not currently have any plans to offer this program away from campus.

6. Has the proposed program been reviewed and approved by the appropriate campus committees and authorities?

The proposed program has been reviewed and approved by the appropriate campus committees. The program review and approval process is shown below. The Academic Program Approval Voting Record can also be found in Appendix H.

a. The Department of Finance in the College of Business voted overwhelmingly in favor of approving the proposal (15 in favor, 1 against, and 1 abstention) on December 2, 2016.
b. The College of Business College Curriculum Committee voted unanimously (5 in favor, 0 against) to approve this proposal on February 22, 2017.
c. The College of Business Faculty voted (61 in favor, 3 against) to approve this proposal. The voting was done electronically and tallied on March 29, 2017.
d. The proposal has been discussed and developed with the cooperation of the Departments of Mathematics and Statistics at Iowa State University. Their letters of support for the major are included in Appendix G.
e. The Faculty Senate Curriculum Committee voted unanimously in favor of approving the proposal (7 in favor, 0 against, 0 abstained) on September 8, 2017.
f. The Faculty Senate Academic Affairs Council voted unanimously in favor of approving the proposal (8 in favor, 0 against, 0 abstained) on October 3, 2017.

7. List date the program proposal was submitted to the Iowa Coordinating Council for Post High School Education (ICCPHSE) and results of listserv review. (THIS WILL BE FILLED IN BY THE PROVOST OFFICE.)

8. Will the proposed program apply for programmatic accreditation? When?

   The actuarial science major will be included as part of our business programs to be reviewed by The Association to Advance Collegiate Schools of Business (AACSB) at our next Continuous Improvement Review, which will take place during the 2019-2020 academic year. Once the major is well established, we will discuss with our industry partners and with members of our College of Business advisory councils whether the pursuit of additional accreditations would be worthwhile.

9. Will articulation agreements be developed for the proposed program? With whom?

   In order to finish the actuarial science major in four years and take the actuarial science preliminary exams as planned, it would be imperative that students start the program as a freshman at Iowa State University. Thus, no articulation agreements are planned with programs at community colleges or other four year institutions. However, we will continue to honor any course level articulation agreements with community colleges that are in place at Iowa State University. In addition, if a student from a community college or other four year institution wants to transfer to Iowa State University and major in actuarial science, they are welcome to do so. However, it is unlikely they would be able to finish the major in a total of four years (i.e., time from when they started their degree elsewhere to the time they finished the actuarial science major at Iowa State University).

10. Will there be opportunities for student internships?

    There should be ample opportunities for internships. Des Moines is the second largest insurance center in the country, making it a likely city for internships. Internships with insurance companies in other cities, with corporations, or with the government are also possible. We have an excellent Career Services Center in the College of Business and they will assist students in their search for internships. The progression of coursework was designed to enable students to compete for internships starting between their sophomore and junior years.

11. Describe the faculty, facilities, and equipment that will be required for the proposed program.

    As mentioned in 1h, most of the courses required for the actuarial science major already exist at Iowa State University and are being taught by highly qualified faculty in the College of Business and the Departments of Mathematics and Statistics. The College of Business hired Dr. Rahul Parsa in the fall of 2015. Dr. Parsa was formerly the Director of the Actuarial Science Program for five years at Drake University. He has over 15 years of experience in teaching actuarial science courses and was recently asked to be on the examination committee for CAS (a position he accepted). He will be the lead faculty member for the actuarial science major.

    Five new courses will be required for the Actuarial Science program, three of them will be taught by faculty in the College of Business Finance Department, and two by faculty in the Department of Mathematics. Dr. Parsa will be teaching two of the three new courses in the College of Business while the remaining College of Business course will be taught by an existing faculty member in the Department of Finance. The Department of Mathematics may need to hire a faculty member to teach the two new Life Contingency courses. This is dependent on the load of their existing faculty, which could change due to anticipated student growth at the university by the time the major is implemented and the two Life Contingency courses are required. The Department of Mathematics has indicated their willingness to staff these courses. As demand for the actuarial science major increases, additional sections of courses may have to be opened to accommodate growth. The tuition revenue received from the program should be adequate to hire the needed faculty.

    The College of Business is housed in the thirteen year old Gerdin Business Building. The Gerdin Business Building has state-of-the-art research and instructional technology. Other than faculty and classroom space, the main resources needed to teach the program are computer hardware and software. These resources are already available in the Gerdin Business Building.

12. From where will the financial resources for the proposed program come (list all that apply, e.g., department reallocation, college reallocation, grants, new to the university)?

    The financial resources for the program will come almost entirely from student tuition. The program is projected to be self-sustaining over time. The tuition revenues shown below are

based on the expected number of students in the program in the table shown in 4a and are based on both the standard tuition rate for freshman and sophomores and the differential tuition rate for juniors and seniors that the College of Business receives through the resource management model in place at Iowa State University. The model assumes that all students are new to the university. The tuition rates are also increased by 2% each year to account for tuition rate increases needed to keep pace with the rate of inflation.

SOURCES	TOTAL AMOUNT
Year 1 Tuition	$160,098
Year 2 Tuition	$435,467
Year 3 Tuition	$912,427
Year 4 Tuition	$1,420,569
Year 5 Tuition	$1,787,901
Year 6 Tuition	$2,110,437
Year 7 Tuition	$2,225,774
Year 8 Tuition	$2,270,290

13. Estimate the total costs/total new costs (incremental increases in expenditures) that will be necessary for the next seven years as a result of the new program. Be as specific as possible.

The total costs and the total new costs associate with the program are shown in the table below. These costs are based on the expected number of students in the program in the table shown in 4a and are based on both the instructional cost of the students and the allocated cost of faculty and students that the College of Business and the Departments of Mathematics and Statistics are responsible for based on the resource management model in place at Iowa State University. The model assumes that all students are new to the university and that additional sections are not needed until new enrollment per semester is 25 students or more. Below 25 students, we should have room in our existing sections to handle the students. The expenses are also increased by 2% each year to account for inflation

	TOTAL COSTS	TOTAL NEW COSTS
Year 1	$35,430	$34,430
Year 2	$457,848	$422,418
Year 3	$986,653	$528,805
Year 4	$1,106,649	$119,996
Year 5	$1,647,650	$541,002
Year 6	$2,111,300	$463,649
Year 7	$2,166,826	$55,526
Year 8	$2,210,162	$43,337

The difference between the expected revenues shown in 12 and the expenses shown above are illustrated in the table below. As shown, there will be three years while the program is growing that cash flow is expected to be negative. This negative flow is a result of the need to add faculty to staff the classes. As demand for the program continues to grow, the tuition revenue will be enough to offset these expenses. Once the program is in steady state (years 7

and 8), it is expected the tuition revenues will be enough to pay for the cost of the program and handle any incidental expenses that are incurred (e.g., marketing expenses, travel for case competitions or other experiential learning opportunities, etc.).

	REVENUES - EXPENSES
Year 1	$124,668
Year 2	$(22,381)
Year 3	$(74,226)
Year 4	$313,920
Year 5	$140,250
Year 6	$(862)
Year 7	$58,949
Year 8	$60,128

14. Describe the marketing plan developed to communicate the new program and recruit students.

    Once the program is approved, marketing materials about the program will be developed and will be shared with prospective students through our normal College of Business marketing channels. We will also work with Iowa State University marketing to promote the program and upon request, we will visit high schools in Iowa to discuss our program.

15. Describe the program evaluation plan to determine if the program is meeting the intended objectives, if the expected student enrollment has occurred, funding for the program, and any other components that affect the effective operation of the program.

    Student recruitment and enrollment will be monitored by our Associate Dean for Undergraduate Programs to ensure enrollment objectives are being met. Assessment of learning outcomes will be monitored to ensure students are meeting the desired learning objectives and for continual improvement of the program. The percent of students sitting for and passing the preliminary exams will be monitored to ensure students are ready for internships and full time positions as actuaries. Student internships and student placement will be monitored to evaluate the success of the program with respect to job placement.

16. Include any additional information that justifies the development of this program.

    The justification for this program has already been covered elsewhere in this proposal.

Appendix A: Comments from Employer Interviews

Companies Contacted
Are part of our proposal development, we talked to employees of Athene USA, EMC Insurance, Principal Financial Group, PricewaterhouseCoopers LLP, Fidelity & Guaranty Life Insurance Company, and Long Term Care Group, Inc.

Summary of overall comments:
Actuaries were unanimous in their opinion that future actuaries need business skills in addition to passing the exams given by the SOA/CAS. All were in agreement that an actuarial program integrated into a business curriculum gives students the best preparation. Insurance is a business and knowledge of marketing, management, accounting, finance, information systems, etc., and how they interact with each other is vital to contributing to the success of the enterprise. In the case of the insurance industry, knowledge of investments, bonds, stocks, financial accounting and reserves, and dividends is critical. In addition, there was consensus for the need for soft skills – communication (written and oral), team work, public speaking, and leadership. One former senior vice president and chief actuary of a company articulated it well when she said it is not good enough for actuaries to do fancy mathematics; they have to communicate their results to non-technical people. A second vice president of a different company looked at actuarial students as needing both skills and talent. In his view, talent is the ability to perform actuarial work. Skills are acquired and developed and eventually differentiate one student from another. In his view, most schools just focus on knowledge transfer and not at developing skills. Skills are developed only through repeated practice and are essential.

Specific Comments: (Note: the specific identify of the individuals have been withheld to protect confidentiality)

1. Company #1 representative, Former Senior Vice President and Chief Actuary, respectively, provided the following comments:
   a. Communication skills are critical for actuaries. Actuaries should be able to explain their results in non-technical people.
   b. Finance - Knowledge of investments is very important.
   c. Internships - Students should have some internship experience before graduation.
   d. Case Competition - Hosting a case competition for actuaries would provide good experience for students.
   e. She did not think additional math work does any good for students. She thought other skills like analytics is better.
   f. She thought a graduate program like an MBA with actuarial preparation will be good for students.

2. Company #2 representatives, Chief Actuary and Casualty Actuary made the following detailed comments:
   a. Analytics/Data Science. Casualty actuaries use a lot of analytics in their work. More importantly, they thought it will provide access to other jobs.

b. Case competition. They thought case competitions would be good for our students.
c. Leadership in college organizations is important.
d. Communications skills are important
e. Team work is important.

3. Company #3 representative, VP Valuation Actuary

This individual works very closely with recruitment of interns and training. He had very clear and detailed ideas on what a student should do and have. A summary of his comments is shown below.

a. He looked at a student as having skills and talent. In his view, talent is the ability to perform actuarial work. Skill is one that differentiates one student from another.
b. In his view, most schools just focus on knowledge transfer and not at developing skills.
c. Skills are developed only through repeated practice and are essential.
d. Development of most people is accomplished by developing skills.
e. Actuarial Skills: Critical thinking, written communication, oral communication, honesty, crisis management, leadership, professional image.
f. Other skills: Exam preparation, Accounting, finance, investments, and analytics.
g. VEE must be part of the curriculum as actuaries need them but will not receive any credit from employer (extra salary) for passing them. On the other hand, if a student passes the actuarial exams, they will get a permanent bump in their salary.
h. He thought the program **must** be in business school as it prepares students in these skills.
i. He was very critical of a program that was located in the statistics department. He thought they were just an exam preparation program and did not provide any skills to the students.

4. Company #4 representatives, Senior Actuarial Analyst and Actuarial Analyst, respectively.

We spoke to these individuals via a conference call. Both work primarily in long-term care insurance (as health actuaries). Here is what they thought actuarial students must have:

a. Business skills are essential
b. Communication and presentation skills
c. Writing skills
d. Math and tech savvy; have to be good at Excel, VBA, SQL, etc.
e. Explain the numbers – should be able to take the numbers and tell the story.
f. Explain their ideas in laymen terms
g. Additional Finance course work is helpful – investments. Know the concepts.
h. GAAP and Accounting concepts
i. Exams: good to have two exams passed. They felt passing too many exams is not very useful; they didn't feel it is fair to pay someone a five exam salary when they have no experience.
j. They thought students should have two internships – one in consulting and one in the industry
k. Prefer a student with 1 exam and two internships over 5 exams and 0 internships.

l. Temple University has course in case competition (they don't know all the details). The students spend first month prepping for the project. Second month they get the case. Second and third month, they work on the case. Fourth month, they make the presentation.
m. They were adamant the student should not be a mathematics major.
n. Experience with SAS is good
o. Use old exam questions in the classroom
p. Suggestion: Maintain a resume book of all students

5. Company #5 representatives thought the following things were important for an actuarial program
   a. Analytics is big and insurance companies need analytical skills
   b. Traditional Finance is good (embellishment) - Options and Hedging are good topics
   c. Need students to be more than technicians. Doing math is not enough. They have to understand the business perspective.
   d. Students should be able to work independently and think on their own
   e. Strong communication skills are needed
   f. Students that need sponsorship are a challenge
   g. Students passing too many exams is bad, 2 or 3 exams is good
   h. Students should be intellectually curious.
   i. Make personal insurance class a requirement
   j. Incorporate analytics into the program
   k. Writing and presentation skills are critical
   l. Need computer skills - require computer science course

6. Company #6 representative thought the following things were important for an actuarial program
   a. Well rounded student is important
   b. Program must place students into good jobs; good track record for jobs
   c. Good internships
   d. Hot area: Data Analytics; exposure to it is very helpful
   e. Skills: Technically sound with good intuition; work ethic, ownership, pride in their work, team work
   f. Communication skills, both written and oral.
   g. Strategic thinking
   h. Business school gave him the big picture
   i. Macroeconomic focus
   j. Start out narrow – just do the work and as they move-up, they need big picture
   k. One to two exams
   l. Don't teach to the exams

Appendix B: Actuarial Science Program Requirements

Course/Subject Area	Credits
General Education Requirements	
International Perspective (May count towards global perspective)	3*
U.S. Diversity (May count towards humanities/social science)	3*
Communications	
ENGL 150 - Critical Thinking and Communication	3
ENGL 250 – Written, Oral, Visual, and Electronic Communication	3
ENGL 302 – Business Communication	3
SP CM 212 – Fundamentals of Public Speaking	3
LIB 160 – Information Literacy	1
Humanities/Social Science	9
Natural Science	3
Global Perspectives	6
Total General Education Requirements	*31**
Pre-Professional/Foundation Requirements	
BUSAD 102/103 - Orientation	1
COM S 113 – Introduction to Spreadsheets and Databases	3
MATH 165 – Calculus I	4
ECON 101 – Principles of Microeconomics	3
ECON 102 – Principles of Macroeconomics	3
BUSAD 250 – Introduction to Business	3
STAT 226 – Introduction to Business Statistics	3
ACCT 284 – Financial Accounting	3
Total Pre-Professional/Foundation Requirements	*23*
Supporting Requirements	
BUSAD 203 – Business Careers and Employment Preparation	1
PHIL 230 – Moral Theory and Practice	3
ACCT 215 – Legal Environment of Business	3
MATH 166 – Calculus II	4
MATH 265 – Calculus III	4
STAT 326 – Introduction to Business Statistics II	3
FIN 320 - Investments	3
Total Supporting Requirements	*21*
Business Core Requirements	
ACCT 285 – Managerial Accounting	3
MIS 301 – Management Information Systems	3
FIN 301 – Principles of Finance	3
MGMT 370 – Management of Organizations	3
MGMT 372 – Responsible Management and Leadership in Business	3
MKT 340 – Principles of Marketing	3
SCM 301 – Supply Chain Management	3
MGMT 478 – Strategic Management	3
Total Business Core Requirements	*24*

Major Requirements	
MATH 240 – Interest Theory	3
STAT 341 – Introduction to the Theory of Probability and Statistics I	4
FIN 424 – Financial Futures and Options	3
ACSCI XXX – Loss Models I	3
ACSCI XXX – Credibility Theory	3
FIN XXX – Risk Management Derivatives	3
MATH XXX – Life Contingency I	3
MATH XXX – Life Contingency II	3
Total Major Requirements	*25*
Total Program Requirements	**124**

*The international perspective and U.S. diversity courses can be dual assigned to count towards global perspectives and humanities/social sciences credits, respectively. If this occurs, total general education requirements are 31 credits.

Appendix C – Sample Four Year Plan without Validation by Educational Experience (VEE) Courses

FRESHMAN	
Fall	**Spring**
BUSAD 102/103 (1 cr.)	ACCT 284 (3 cr.)
ECON 101 (3 cr.)	ECON 102 (3 cr.)
COM S 113 (3 cr.)	MATH 166 (4 cr.)
ENGL 150 (3 cr.)	BUSAD 250 (3 cr.)
PHIL 230 (3 cr.)	STAT 226 (3 cr.)
MATH 165 (4 cr.)	LIB 160 (1 cr.)
17 cr.	**17 cr.**

SOPHOMORE	
Fall	**Spring**
FIN 301 (3 cr.)	STAT 341 (4 cr.)
MATH 265 (4 cr.)	FIN 320 (3 cr.)
ACCT 285 (3 cr.)	MGMT 372 (3 cr.)
STAT 326 (3 cr.)	ENGL 250 (3 cr.)
BUSAD 203 (1 cr.)	GEN ED (3 cr.)
MATH 240 (3 cr.)	
Students should take Financial Mathematics exam during winter break	**Students should take Probability exam during summer between sophomore and junior year**
17 cr.	**16 cr.**

JUNIOR	
Fall	**Spring**
FIN 424 (3 cr.)	RISK MGMT DERIVATIVES (FIN XXX) (3 cr.)
LOSS MODELS I (ACSCI XXX) (3 cr.)	ENGL 302 (3 cr.)
SP CM 212 (3 cr.)	SCM 301 (3 cr.)
MIS 301 (3 cr.)	GEN ED (3 cr.)
GEN ED (3 cr.)	CREDIBILITY THEORY (ACSCI XXX) (3 cr.)
	Students should take Investment and Financial Markets Exam during summer between junior and senior year
15 cr.	**15 cr.**

SENIOR	
Fall	**Spring**
LIFE CON I (MATH XXX) (3 cr.)	LIFE CON II (MATH XXX) (3 cr.)
MGMT 370 (3 cr.)	GEN ED (3 cr.)
MKT 340 (3 cr.)	MGMT 478 (3 cr.)
GEN ED (3 cr.)	ACCT 215 (3 cr.)
GEN ED (3 cr.)	
15 cr.	**12 cr.**

124 credits minimum – This assumes students can dual assign the international perspective and U.S. diversity requirements with other general education requirements.

Appendix D – Sample Four Year Plan with Validation by Educational Experience (VEE) Courses

FRESHMAN	
Fall	**Spring**
BUSAD 102/103 (1 cr.)	ACCT 284 – for VEE in Accounting (3 cr.)
ECON 101 – for VEE in Microeconomics (3 cr.)	ECON 102 – for VEE in Macroeconomics (3 cr.)
COM S 113 (3 cr.)	MATH 166 (4 cr.)
ENGL 150 (3 cr.)	BUSAD 250 (3 cr.)
PHIL 230 (3 cr.)	STAT 226 (3 cr.)
MATH 165 (4 cr.)	LIB 160 (1 cr.)
17 cr.	**17 cr.**

SOPHOMORE	
Fall	**Spring**
FIN 301 (3 cr.)	STAT 341 (4 cr.)
MATH 265 (4 cr.)	FIN 320 (3 cr.)
ACCT 285 (3 cr.)	MGMT 372 (3 cr.)
STAT 326 (3 cr.)	ENGL 250 (3 cr.)
BUSAD 203 (1 cr.)	GEN ED (3 cr.)
MATH 240 (3 cr.)	
Students should take Financial Mathematics exam during winter break	**Students should take Probability exam during summer between sophomore and junior year**
17 cr.	**16 cr.**

JUNIOR	
Fall	**Spring**
LOSS MODELS I (ACSCI XXX) (3 cr.)	RISK MGMT DERIVATIVES (FIN XXX) (3 cr.)
FIN 424 (3 cr.)	ENGL 302 (3 cr.)
SP CM 212 (3 cr.)	SCM 301 (3 cr.)
MIS 301 (3 cr.)	GEN ED (3 cr.)
GEN ED (3 cr.)	STAT 342 – for VEE in Mathematical Stat. (4 cr.)
MATH 207 (3 cr.)	CREDIBILITY THEORY (ACSCI XXX) (3 cr.)
	Students should take Investment and Financial Markets Exam during summer between junior and senior year
18 cr.	**19 cr.**

SENIOR	
Fall	**Spring**
LIFE CON I (MATH XXX) (3 cr.)	LIFE CON II (MATH XXX) (3 cr.)
MGMT 370 (3 cr.)	GEN ED (3 cr.)
MKT 340 (3 cr.)	MGMT 478 (3 cr.)
GEN ED (3 cr.)	ACCT 215 (3 cr.)
GEN ED (3 cr.)	FIN 310 – for VEE in Corporate finance (3 cr.)
15 cr.	**15 cr.**

134 credits minimum including VEE coursework – This assumes students can dual assign the international perspective and U.S. diversity requirements with other general education requirements.

Appendix E: Catalog Description of New Courses

ACSCI XXX - Loss Models I: Probability distributions used to model uncertain events in actuarial practice. Aggregate models, evaluating the effect of various coverage modifications such as deductibles and limits. Construction of empirical models, calculations of common risk measures, and calculations of commonly used severity and frequency models. Various methods for estimating distributional parameters and their properties.

ACSCI XXX – Credibility Theory: Bayesian estimation, including conjugate priors, posterior distributions, and the Poisson-gamma model. Credibility theory, including limited fluctuation credibility, applying Bayesian analysis for both discrete and continuous models, Buhlmann and Buhlmann-Straub models, and their relationship to Bayesian models. Simulating discrete and continuous random variables and the bootstrap method for estimating mean squared error.

MATH XXX – Life Contingencies I: Present value determination of random variables associated with benefits and expenses for life insurance and annuities, premium calculation methodologies, parametric survival models, single life state, benefit premiums, and reserves.

MATH XXX – Life Contingencies II: Multiple life functions, multiple decrement models, reserving for insurance and annuities, and applications to pension plans and retirement benefits.

FIN XXX – Risk Management Derivatives: Advanced models for options and bond pricing. Geometric Brownian motion, risk-neutral pricing, no-arbitrage pricing models, exotic options, pricing options through simulation, and applications of derivatives to hedging market and credit risk exposure. Risk management tools and how they are applied within financial institutions such as banks, insurance companies, mutual funds, and hedge funds, as well as the corporate enterprise. Topics include the Basel accords, volatility modelling, value-at-risk analysis, extreme value theory, credit default swaps, and portfolio simulation.

Appendix F: Industry Letters of Support

Fidelity & Guaranty Life®

July 25, 2017

David P. Spalding
Raisbeck Endowed Dean
Professor of Finance
College of Business
Iowa State University

Dear Dean Spalding:

I am writing in support of the actuarial science program you are planning to start in the College of Business at Iowa State University ("ISU"). As CEO of Fidelity & Guaranty Life, a leading provider of indexed life and indexed annuity products headquartered in Des Moines, and as former CEO of Aviva USA, I am keenly aware of the significant demand for actuaries in Central Iowa and nationally. As you know, Central Iowa is home to a large number of insurance and financial services companies who depend on having a strong pipeline of well-trained actuaries to support their businesses and growth.

ISU is a great institution with a long history of making substantial contributions to the economic development and success of our great state. Adding an actuarial science program would demonstrate ISU's commitment to educating and building our future workforce to support a large, important and growing sector of our state's economy.

Very truly yours,

Christopher J. Littlefield
President & CEO

Fidelity & Guaranty Life Insurance Company | Two Ruan Center | 601 Locust Street, Suite #1400, Des Moines, IA 50309
1 888 697 LIFE | 515 244 1199 (fax) | www.fglife.com

June 15, 2017

David P. Spalding

Raisbeck Endowed Dean

Professor of Finance, College of Business

Iowa State University

Dear Mr. Spalding,

I understand you are planning to start an Actuarial Science Program in the College of Business. I support this enthusiastically. As former Insurance Commissioner (1989-1994) and as CEO and/or Board Member of several for-profit and non-profit health care and health insurance organizations in Iowa, I am keenly aware of the demand for actuaries. I am also quite familiar with the reputation of Iowa State University and its programs.

Given the proximity of Iowa State to Des Moines and its reputation, I strongly believe an undergraduate program will be very beneficial to the industry. I might also add that it would be good for your students. I wish you the best in this endeavor.

Feel free to contact me if you have any questions.

David J. Lyons

5400 University Avenue
West Des Moines, IA 50266-5997
515.225.5400
www.fblfinancial.com
NYSE:FFG

Farm Bureau Financial Services:
Farm Bureau Life Insurance Company
Farm Bureau Property & Casualty Insurance Company

FBL Financial Group, Inc.

June 29, 2017

Dean David Spaulding
Professor of Finance
College of Business
Iowa State University

Dear Dean Spaulding:

I am writing in support of Iowa State University creating a program for actuarial science. As you know, I spent four years as Commissioner of insurance for the state of Iowa. In that role, I took a keen interest in developing the next generation of insurance professionals. Iowa has a large insurance industry with nearly 90,000 Iowans either working directly in the industry or in a business that works with the industry. We need to develop a workforce for the future to maintain our standing in the insurance industry.

I believe Iowa State University is uniquely qualified to offer this program given the strong position the university is in with data and business analytics. The actuary of the future will need to merge his or her skills with data and business analytics. By having the opportunity for your students to work directly in both areas during educational training that is a powerful combination. In addition, your students would have abundant internship opportunities in central Iowa, which I believe is another significant advantage over other programs.

The industry needs actuaries and the opportunities for the next generation are immense. I would be happy to assist in any way I can and look forward to continuing our work together.

Respectfully,

/s/ *Nick Gerhart*

Nick Gerhart
Chief Administrative Officer

AmericanEnterprise
GROUP INC.

David P. Spalding
Raisbeck Endowed Dean
Professor of Finance-College of Business
Gerdin Business Building 1200
2167 Union Drive
Ames, Iowa 50011

June 15, 2017

Re: Proposed Iowa State University Actuarial Science Program

Dear Dean Spalding:

I want to take this opportunity to lend my support for an Actuarial Science Program at Iowa State University. As a former Iowa Insurance Commissioner (2005-2013) and Insurance Division staff member for over 20 years, I know how important it is for the industry to have well-qualified staff, especially in the area of actuarial expertise. Both as a regulator and now in my current position, I have relied heavily on the knowledge and advice of actuaries to guide my decisions that affect so many consumers.

As we continue to see the insurance industry grow in Iowa, it's important that we encourage and educate men and women in actuarial science. That is why I am excited to lend my support for the establishment of a program at Iowa State University. Such an additional program in Iowa will ensure that we can attract the best and brightest to Iowa to study and, hopefully, to stay and continue to grow this great industry.

Thank you for the opportunity to express my support.

Sincerely,

Susan E. Voss
VP/General Counsel
American Enterprise Group
515-245-2330
Susan.voss@americanenterprise.com

Bruce G. Kelley, CPCU
PRESIDENT & CEO

bruce.g.kelley@emcins.com
P 515.345.2950 F 515.345.2754

August 28, 2017

EMC INSURANCE

Dean David Spaulding
Professor of Finance
College of Business
Iowa State University

Dear Dean Spaulding:

I have spent over thirty years as both a member and a supporter of Iowa's insurance industry. Over that time I've developed a deep appreciation for the important role insurance plays not only in our state's economy, but in the role it plays securing the social contract each citizen has with one another, the American Dream. From the businesses to the households that EMC insures, our industry's unique ability to prevent financial ruin is a key part of the glue that binds civilized society.

When I learned of Iowa State University's intent to create an actuarial science program, I was immediately and enthusiastically supportive. Actuaries play a crucial role in ensuring that insurance carriers succeed in their mission to protect the financial position of individuals and businesses. Whether it is helping to set reasonable insurance rates or helping set aside the appropriate amount of money to cover claims, actuaries are at the heart of every insurance carrier's success.

By training more actuaries here in Iowa, we create an environment that supports our children's' ability to stay in this great state past their education years and projects our Iowa values to other states that may benefit from the program. The program will prepare students for a highly skilled, sought after profession, to meet the industry's demand for analytical talent now and into the future. I am honored to lend both my own support and EMC's to the success of Iowa State University's new actuarial science program.

Respectfully,

Bruce Kelley
President & CEO

717 Mulberry Street | Des Moines, IA 50309-3872 | P.O. Box 712 | Des Moines, IA 50306-0712 | www.emcins.com

Executive Offices

Principal Financial Group®
711 High Street Des Moines, Iowa 50392-0100
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September 20, 2017

Iowa Board of Regents
11260 Aurora Ave
Urbandale, IA 50322

I would like to advocate on behalf of Iowa State University, in particular the College of Business and its interest in pursuing approval for an Actuarial Science major this fall housed in the College of Business. Not only does Principal Financial Group have a strong need for these degreed individuals, I know I speak on behalf of the industry when I say that demand has never been greater for actuarial science majors. Further, having this major in the College of Business will ensure that students get the business knowledge, in addition to the mathematics and statistic knowledge needed to pass the exams. It's more important now than ever before for actuarial science majors to have business acumen along with their actuarial science expertise.

I would also point out actuarial science majors have a great deal of demand in the areas of data analytics, machine learning, artificial intelligence – which continue to dominate new hiring positions for organizations that are adapting to a digital world. Iowa State University and the College of Business are in a unique position to offer the expertise needed in these areas.

On behalf of Principal, I ask that you strongly consider supporting Iowa State's request to add this program to its curriculum.

Best regards,

Daniel J. Houston
Chairman, President and CEO

Appendix G: Letters of Support from the Departments of Mathematics and Statistics at Iowa State University

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Mathematics
396 Carver Hall
Ames, IA 50011-2067
515-294-1752
FAX 515-294-5454
Email: mathematics@iastate.edu

To: Danny J. Johnson, Associate Dean for Undergraduate Programs, College of Business, ISU
From: Clifford Bergman, Chair, Mathematics CB
Re: Major in Actuarial Science
Date: May 8, 2017

I am very pleased to express my support for the proposed major in Actuarial Science. Every year our "senior survey" contains requests for such a program. In addition to the full Bachelors of Science program, I anticipate that a Certificate in Actuarial Studies will become available. I believe this will be a great option for students in Mathematics who are looking for a course of study with a clear-cut career path.

The Mathematics Department already offers most of the mathematics courses included in the proposed program, including Interest Theory. The remaining two courses, Life Contingencies I and II, will be developed once the new major is approved.

We look forward to participating in the program and interacting with the students.

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Interoffice Communication

Department of Statistics
Snedecor Hall
Ames, Iowa 50011-1210
Phone: (515) 294-3440
Fax: (515) 294-4040

DATE: May 15, 2017

TO: Danny J. Johnson, Associate Dean, College of Business

FROM: Max D. Morris, Professor and Chair of Statistics

SUBJECT: Actuarial Science Program

This memo is to formally offer Department of Statistics support for the proposed CoB degree program in Actuarial Science, contingent upon new availability of relevant CoB courses to LAS students. Access to these courses is essential for Statistics majors who wish to participate in the proposed LAS Certificate Program in Actuarial Studies.

The combination of the new Actuarial Science program in CoB, and the LAS Certificate program in Actuarial Studies, will create professional opportunities for a wide range of ISU students; we're delighted to support this effort.

Appendix H: Academic Program Approval Voting Record

This document is to be appended as the last page of the proposal for any new or revised academic program to record the successive votes of approval as the proposal moves through its required review and approval steps. Consult Faculty Handbook Section 10.8 or the Faculty Senate Curriculum Committee website for information regarding Committee review and voting requirements for each action.

Curricular Action: (check appropriate boxes below)

1. X New Program □ Name Change □ Discontinuation □ Concurrent Degree for:
2. X Undergraduate Major □ Graduate Major □ Undergraduate Minor □ Graduate Minor
   □ Undergraduate Certificate □ Graduate Certificate □ Other: _____
3. Name of Proposed Change: Major in Actuarial Science (B.S. Degree)_____
4. Name of Contact Person: Dr. Rahul Parsa e-mail address: raparsa@iastate.edu
5. Primary College: College of Business___ Secondary College: _____
6. Involved Department(s): Primarily the Department of Finance within the College of Business.

The Departments of Mathematics and Statistics in the College of Liberal Arts and Sciences will deliver a number of courses for the major.

Voting record for this curricular action:

Voting Body	Votes			Date of Vote
	For	Against	Abstain	
Dept. or Program Committee				
Department of Finance	15	1	1	December 2, 2016
College of Business Curriculum Committee	5	0	0	February 22, 2017
College of Business Faculty Approval Vote	61	3		March 29, 2017
Graduate Council				
Faculty Senate Curriculum Committee	7	0	0	September 8, 2017
Faculty Senate Academic Affairs Council	8	0	0	October 3, 2017
Faculty Senate				

[FSCC – November 2013]