This template is to be used only by programs that have received specific written approval from the Provost's office to proceed with internal proposal development and review. The proposal template should be completed in full and submitted to the University Provost's Office [mailto: curriculumplanning@asu.edu]. It must undergo all internal university review and approval steps including those at the unit, college, and university levels. A program <u>may not</u> be implemented until the Provost's Office notifies the academic unit that the program may be offered.

College/School/Institute: **College of Liberal Arts and Sciences**

Department/Division/School: **School of Mathematical and Statistical Sciences**

Proposing Faculty Group (if applicable):   **Dr. May Boggess, Dr. Jelena Milovanovic, Toni Garcia**

Is this is an official joint degree program?   **No, this is not a joint degree program**

     If "Yes" List all the additional college(s)/school(s)/institute(s) that will be involved in offering the degree program and providing the necessary resources. Note: All units offering this program must have collaborated in the proposal development and completed the appropriate unit and college/school approvals.

Degree type: **BS-Bachelor of Science**

     If other; provide degree type title and proposed abbreviation:

Name of degree program (major):   Actuarial Science

     Are any concentrations to be established under this degree program? No, concentrations will not be established.
     A separate "Proposal to Establish an Undergraduate Concentration" is required for each concentration.

Is a program fee required?   **Yes, a program fee is required.**

Requested effective catalog year?   **2014-15**

     For deadline dates see: Curriculum Workflow Calendars.

Delivery method: **On-campus only (ground courses and/or iCourses)**

     Once students elect a campus or On-line option, students will not be able to move back and forth between the on-campus and the ASU Online options. Approval from the Office of the Provost and Philip Regier (*Executive Vice Provost and Dean*) is required to offer programs through ASU Online.

Campus/Locations:

     Indicate <u>all</u> locations where this program will be offered.

☐ Downtown Phoenix   ☐ Polytechnic   ☒ Tempe   ☐ West   Other:

Proposal Contact

Name:	May Boggess	Title:	Associate Professor
Phone number:	480-965-7195	Email:	may.boggess@asu.edu

Dean Approval(s)

     This proposal has been approved by all necessary unit and College/School levels of review. I recommend implementation of the proposed program.

College/School/Division Dean name: Paul LePore

Signature _____ **Date:** **5/9/2013**

College/School/Division Dean name (if more than one college involved):

Signature _____ **Date:** / /20

An electronic signature, an email from the dean or dean's designee, or a PDF of the signed signature page is acceptable.

1. Purpose and Nature of Program

Provide a brief program description. Include the distinctive features of the program that make it unique.

An actuary is a person who works for insurance or investment companies and is primarily responsible for determining rates and benefits for insurance policies and retirement instruments. The profession of actuary regularly ranks near the top in surveys of job satisfaction. One becomes an actuary, and progresses in the profession, by passing tests administered by the Society of Actuaries and the Casualty Actuarial Society, which govern the profession. The actuarial science program combines traditional math and statistics courses with a solid foundation in business including economics and finance. This program of study provides students with preparation for professional actuarial credentialing exams that will set them apart from graduates of many other actuarial science programs.

2. Student Learning Outcomes and Assessment Methods

A. Knowledge, competencies, and skills

List the knowledge, competencies, and skills students should have when they graduate from the proposed degree program.(You can find examples of program Learning Outcomes at (http://www.asu.edu/oue/assessment.html) Graduates of the BS in Actuarial Science will:

1. Analyze contingent cash flows with a combination of mathematical and statistical modeling techniques according to economic and financial principles.

2. Be well prepared for all the preliminary actuarial exams jointly administered by the Society of Actuaries (SOA) and the Casualty Actuarial Society (CAS).

3. Have an option to attain all of their VEE (Validation by Educational Experience) credits in Economics, Corporate Finance, and Applied Statistical Methods. An accredited actuary must pass a series of examinations in addition to attaining these VEE credits. Having earned these credits while still a student at ASU, our graduates will be very desirable and marketable for entry level actuary positions.

B. **Assessment**

Describe the plan and methods to assess whether students have achieved the knowledge, competencies and skills identified in the Learning Outcomes. (You can find examples of assessment methods at (http://www.asu.edu/oue/assessment.html) Graduates of the BS in Actuarial Science will be subjected to diagnostic, comprehensive, and core examinations within the School of Mathematical and Statistical Sciences.

3. Academic Curriculum and Requirements

A. Major Map.

Attach a copy of the "proposed" major map for this degree program and each concentration(s) to be offered. Instructions on how to create a "proposed major map" in BAMM can be found in the Build a Major Map Training Guide.

B. Summary of credit hours required for this program

Total credit hours must be 120 and include first year composition, general studies, core/required courses, program specific electives, and any additional requirements (e.g., concentration credits).

Requirements	Credit Hours
First Year Composition	6
ASU 101 (or Equivalent)	1
General Studies	26
College requirements	6
Core/required courses	60
Program specific electives	6
Additional requirements	0
Other; please explain Electives to complete the degree for students seeking VEE requirement, should stongly consdier the following courses: ECN 312: Intermediate Microeconomic Theory (3cr) ECN 425: Introduction to Econometrics (3 cr) FIN 300: Fundamentals of Finance (3 cr) ACC 231: Uses of Accounting Information I (3 cr) ACC 241: Uses of Accounting Information II (3cr) OR ACC 242 Managerial Accounting (3 cr)	15
Total	**120**

C. Core/Required Courses.

    i.   Total required and/or core course credit hours: 60

    ii.   List the name, prefix, and credit hours for each required/core course for this program

        MAT 270: Calculus with Analytic Geometry I (4 cr)
        MAT 271: Calculus with Analytic Geometry II (4 cr)
        MAT 272: Calculus with Analytic Geometry III (4 cr)
        MAT 343: Applied Linear Algebra (3cr)
        MAT 300: Mathematical Structures (3 cr)
        MAT 371: Advanced Calculus I (3 cr)
        STP 420: Introductory Applied Statistics (3 cr)
        STP 427: Mathematical Statistics (3 cr)
        STP 429: Experimental Statistics (3 cr)
        ACT 201: Introduction to Elements and Techniques of Actuarial Science (3 cr)
        ACT 310: Mathematics of Finance (4 cr)
        ACT 415 – Probability for Risk Management (3 cr)
        ACT 430 – Mathematics of Financial Derivatives (3 cr)
        ACT 440 – Life Contingencies I (3 cr)
        ACT 441 – Life Contingencies II (3 cr)
        ACT 450 – Actuarial Models and Modeling I (3 cr)
        ACT 451 – Actuarial Models and Modeling II (3 cr)
        ACT 491 – Actuarial Exam Preparation Seminar (1 cr) - repeated up to 2 credits max.
        CIS 105: Computer Applications and Information Technology (3 cr)

D. Program Specific Electives.
  i. Total required program elective credit hours:**6**

  ii. List the name, prefix, and credit hours for any program specific electives for this program:
  ECN 211 Macroeconomic Principles (3 cr)
  ECN 212 Microeconomic Principles (3 cr)

E. Additional Program Requirements (if any):
  List and describe any capstone experiences, milestone, and/or additional requirements.
  n/a

F. Concentrations
  i. Are any concentrations to be established under this degree program? **No, concentrations will not be established.**
  If yes, are concentrations required? No, concentrations will not be required.

  ii. List courses & additional requirements for the proposed concentration (s):

Concentration Name	Total credit hours	Core/Required Courses for Concentration (Prefix, # & Title)	Total Core credit hours	Program Specific Electives (include course name and prefix)	Total Elective credit hours	Additional Requirements (i.e. milestones, capstones)

4. New Course Development

A. Will a new course prefix (es) be required for this degree program? Yes
  If yes, list prefix name(s) (i.e. ENG- English) ACT-Actuarial Sciences

Note: A request for a "New/Change to Prefix Request Form" must be completed for each new prefix required and submitted with this proposal: http://provost.asu.edu/files/shared/curriculum/Prefix_Request.doc.

B. New Courses Required for Proposed Degree Program.
  List all new courses required for this program, including course prefix, number and course description.

ACT 201 – Introduction to Elements and Techniques of Actuarial Science
The guiding principle for this course is to provide an introduction to the important aspects of actuarial work. The student will be exposed to the development of actuarial techniques in the context of life insurance, casualty and property insurance, superannuation and investment. The aim is to develop problem-solving skills and give students some basic tools for risk management and financial modeling, including the use of Excel spreadsheets for both, calculations and simulations. The course will show students how studies in related disciplines (such as accounting, demography, economics, statistics, computing and mathematics) are essential to the education of an actuary. Guest speakers from the industry will share their knowledge and insight on how to become a successful actuary.

ACT 310 – Mathematics of Finance
The guiding principle for this course is that potential actuaries should master the Exam FM/2 syllabus. The goal of this course is to provide an understanding of the fundamental concepts of financial mathematics, and how those concepts are applied in calculating present and accumulated values for various streams of cash flows as a basis for future use in: reserving, valuation, pricing, asset/liability management, investment income, capital budgeting, and valuing contingent cash flows. Topics include: mathematics of

compound interest, including annuities certain, amortization schedules, yields curves, sinking funds and bonds. The student will also be given an introduction to financial instruments, including derivatives, and the concept of no-arbitrage as it relates to financial mathematics.

ACT 415 – Probability for Risk Management
The guiding principle for this course is that potential actuaries should master the Exam P/1 syllabus. The purpose of this course is to develop knowledge of the fundamental probability tools for quantitatively assessing risk. Topics include: introduction to probability concepts, including definition of probability, independence, conditional probability, random variables, specific discrete and continuous probability distributions, multivariate random variables, moments and moment generating functions, functions of random variables, sampling distributions, and central limit theorem. The application of these tools to problems encountered in actuarial science is emphasized.

ACT 430 – Mathematics of Financial Derivatives
The guiding principle for this course is that potential actuaries should master the Exam MFE/3 syllabus. The purpose of this course is to develop knowledge of the theoretical basis of certain actuarial models and the application of those models to insurance and other financial risks. Topics include: option pricing, Black-Scholes formula, delta hedging, exotic options, Brownian motion, interest rate models and simulations.

ACT 440 – Life Contingencies I
The guiding principle for this course is that potential actuaries should master the first half of the Exam MLC/4 syllabus. The purpose of this course is to develop the student's knowledge of the theoretical basis of life contingent actuarial models and the application of those models to insurance and other financial risks. Topics include: life tables, present value determination for life insurances and annuities, benefit premiums and reserves.

ACT 441 – Life Contingencies II
The guiding principle for this course is that potential actuaries should master the second half of the Exam MLC/4 syllabus. The purpose of this course is to develop the student's knowledge of the theoretical basis of life contingent actuarial models and the application of those models to insurance and other financial risks. Topics include: multiple life functions, multiple decrement models and benefit reserves.

ACT 450 – Actuarial Models and Modeling I
The guiding principle for this course is that potential actuaries should master the first half of the Exam C/5 syllabus. The purpose of this course is to help the student understand the steps involved in the modeling process and how to carry out these steps in solving business problems. The student should be able to: analyze data from an application in a business context, determine a suitable model including parameter values and provide measures of confidence for decision making based upon the model. Topics include: survival, severity, frequency and aggregate models and their modifications.

ACT 451 – Actuarial Models and Modeling II
The guiding principle for this course is that potential actuaries should master the second half of the Exam C/5 syllabus. The purpose of this course is to help the student understand the steps involved in the modeling process and how to carry out these steps in solving business problems. The student should be able to: analyze data from an application in a business context, determine a suitable model including parameter values and provide measures of confidence for decision making based upon the model. Topics include: construction and selection of parametric models, Bayesian estimation, credibility, and simulation.

ACT 491 – Actuarial Exam Preparation Seminar
Review and practice of sample actuarial exams.

> Note: New course requests must be submitted electronically via Curriculum ChangeMaker and undergo all internal university review and approval steps including those at the unit, college, and university levels.

5. Program Need

Explain why the university needs to offer this program (include target audience and market).

Actuary is consistently rated as one of the best jobs in America. US News and World Report, the Jobs Rated Almanac, CNN Money, and many others, agree that few other occupations offer the combination of benefits that an actuarial career can offer. In almost every category, such as work environment, employment outlook, job security, growth opportunity, and salary, a career as an actuary is hard to beat. It is no surprise then that the U.S. Department of Labor predicts the employment of actuaries is expected to grow faster than average for all occupations through 2014.

Being an actuary requires passing a series of examinations to earn an actuarial designation through the Casualty Actuarial Society or the Society of Actuaries. It takes 6-10 years to pass all the exams required to become a Fellow of one of the Societies. An intermediate step is the Associateship (ASA), which involves passing five highly mathematical exams, known as the preliminary exams. Typically beginning a career as an actuary can be achieved by passing the first two exams, and then taking subsequent exams while working.

Few U.S. universities offer courses that prepare students for the preliminary exams. More precisely, only 14 schools are currently designated as Centers of Actuarial Excellence by the Society of Actuaries, of which none are located in western states. In addition, there is no undergraduate degree program in actuarial science within the state of Arizona. The Phoenix area is home to at least 20 insurance and financial consulting companies that employ actuaries. Thus, there is a critical local as well as regional need for a program of training in the actuarial sciences. The School of Mathematical and Statistical Sciences at Arizona State University is well poised to fill this need in actuarial education.

6. Impact on Other Programs

List other academic units that might be impacted by the proposed program and describe the potential impact (e.g., how the implementation of this program might affect student headcount/enrollment, student recruitment, faculty participation, course content, etc. in other programs). Attach letters of collaboration/support from impacted programs.

Required courses in Economics, Finance, and Business will likely see increased enrollments as the program becomes more established.

7. Projected Enrollment

How many new students do you anticipate enrolling in this program each year for the next five years?

5-YEAR PROJECTED ANNUAL ENROLLMENT					
	1st Year	2nd Year (Yr 1 continuing + new entering)	3rd Year (Yr 1 & 2 continuing + new entering)	4th Year (Yrs 1, 2, 3 continuing + new entering)	5th Year (Yrs 1, 2, 3, 4 continuing + new entering)
Number of Students Majoring (Headcount)	40	80	120	160	200

8. Accreditation or Licensing Requirements

If applicable, provide the names of the external agencies for accreditation, professional licensing, etc. that guide your curriculum for this program, if any. Describe any requirements for accreditation or licensing.

One becomes an actuary, and progresses in the profession, by passing tests administered by the Society of Actuaries and the Casualty Actuarial Society, which govern the profession. This program of study provides students with preparation for professional actuarial credentialing exams that will set them apart from graduates of many other actuarial science programs.

9. Faculty & Staff

A. Current faculty
List the name, rank, highest degree, area of specialization/expertise and estimate of the level of involvement of all current faculties who will teach in the program.

Dr. May Bogggess, Associate Professor, statistics and actuarial science

Dr. Jelena Milovanovic, Lecturer, statistics and actuarial science

Ms. Toni Garcia, Lecturer, statistics and actuarial science

B. New Faculty:
Describe the new faculty hiring needed during the next three years to sustain the program. List the anticipated hiring schedule and financial sources for supporting the addition of these faculty members.

Two additional faculty lines will be needed - preferably tenure-track, or professor of practice. One of these lines to start in Fall 2014 and one to start in Fall 2015. We will need bridging funds to pay for these lines for three years. After that, we anticipate increased enrollment funding from tuition will sustain these faculty lines long-term. Of the enrollment numbers mentioned in part 7, half of these enrollments (at least 80 per year in the long-run) should come from students who otherwise would not have come to ASU. Based on the degree requirements, these new student enrollments will generate an additional 90 student FTE in SoMSS courses (including ACT courses) which equates to an additional funding stream of $315K per year (based on $3500 per student FTE). This funding stream is sufficient to sustain the two requested faculty lines. These new students will also generate an additional 50 student FTEs in CLAS courses (over and above SoMSS courses) and an additional 39 student FTE in University courses (over and above CLAS courses).

C. Administration of the program.
Explain how the program will be administered for the purposes of admissions, advising, course offerings, etc. Discuss the available staff support.

Faculty and Staff support currently available in the School of Mathematical and Statistical Sciences is sufficient to meet the needs of this new program.

10. Resources (necessary to launch and sustain the program)

A. Required resources:
Describe any new resources required for this program's success, such as new support staff, new facilities, new library resources, new technology resources, etc.

No new resources are required.

B. Resource acquisition:
Explain how the resources to support this program will be obtained.

N/A

APPENDIX
OPERATIONAL INFORMATION FOR UNDERGRADUATE PROGRAMS
(This information is used to populate the Degree Search/catalog website.)

1. **Program Name (Major):** Actuarial Science

2. **Program Description** (150 words maximum)
The BS actuarial science provides students the quantitative and business skills needed to prepare them for a career as an actuary. Actuaries are professionals who assemble and analyze data to estimate the probability and likely cost of an event such as death, sickness, injury, disability or loss of property. It is consistently one of the most secure and highest-paying professions available, even during tough economic times. As part of the School of Mathematical and Statistical Sciences, the actuarial science program combines traditional math and statistics courses with a solid foundation in business,economics and finance. This provides students with preparation for professional actuarial credentialing exams that will set them apart from graduates of many other actuarial science programs.

3. **Contact and Support Information**

    Building Name, code and room number: *(Search ASU map)*

    PSA 211
    Program office telephone number: (*i.e. 480/965-2100*)   480/965-7195
    Program Email Address: math@asu.edu
    Program Website Address: http://math.asu.edu

4. **Delivery/Campus Information Delivery: On-campus only (ground courses and/or iCourses)**
Note: Once students elect a campus or On-line option, students will not be able to move back and forth between the on-campus and the ASU Online options. Approval from the Office of the Provost and Philip Regier (Executive Vice Provost and Dean) is required to offer programs through ASU Online.

5. **Campus/Locations:** *indicate **all** locations where this program will be offered.*

    ☐ Downtown Phoenix   ☐ Polytechnic   ☒ Tempe   ☐ West   Other:

6. **Additional Program Description Information**

    A. Additional program fee required for this program?   Yes
    B. Does this program have a second language requirement?   No

7. **Career Opportunities & Concentrations**
Provide a brief description of career opportunities available for this degree program. If program will have concentrations, provide a brief description for each concentration. (150 words maximum)
In addition to providing preparation for a career as an actuary, this degree program provides students the skills needed for careers in areas such as:
    - corporate and consulting services, especially management and public relations
    - security and commodity brokerage
    - government programs, such as Social Security and Medicare
    - insurance
    - academia (college teacher, university professor with advanced degree)

8. **Additional Admission Requirements**
If applicable list any admission requirements (freshman and/or transfer) that are higher than and/or in addition to the

university minimum undergraduate admission requirements.)
All students are required to meet general university admission requirements.

9. **Keywords**
   List all keywords used to search for this program. Keywords should be specific to the proposed program.
   actuary, actuarial science

10. **Advising Committee Code**
    List the existing advising committee code to be associated with this degree. UGASMA
    Note: If a new advising committee needs to be created, please complete the following form:
    Proposal to create an undergraduate advising committee

11. **First Required Math Course**

    List the first math course required in the major map. MAT 270 - Calculus with Analytic Geometry I.

12. **Western Undergraduate Exchange (WUE) Eligible:**

    Has a request been submitted to the Provost by the Dean to consider this degree program as eligible for WUE?No

    Note: No action will be taken during the implementation process with regards to WUE until approval is received from the Provost.

13. **Area(s) of Interest**

    A. Select **one (1)** primary Area of Interest from the list below that applies to this program.

    ☐ **Architecture, Construction & Design**   ☐ **Engineering & Technology**
    ☐ **Artistic Expression & Performance**   ☐ **Environmental Issues & Physical Science**
    ☐ **Biological Sciences, Health & Wellness**   ☐ **Interdisciplinary Studies**
    ☐ **Business, Management & Economics**   ☐ **Languages & Cultures**
    ☐ **Communication & Media**   ☐ **Law & Justice**
    ☒ **Computing & Mathematics**   ☐ **Social Science, Policies & Issues**
    ☐ **Education & Teaching**

    B. Select **any** additional Areas of Interest that apply to this program from the list below.

    ☐ **Architecture, Construction & Design**   ☐ **Engineering & Technology**
    ☐ **Artistic Expression & Performance**   ☐ **Environmental Issues & Physical Science**
    ☐ **Biological Sciences, Health & Wellness**   ☐ **Interdisciplinary Studies**
    ☒ **Business, Management & Economics**   ☐ **Languages & Cultures**
    ☐ **Communication & Media**   ☐ **Law & Justice**
    ☒ **Computing & Mathematics**   ☐ **Social Science, Policies & Issues**
    ☐ **Education & Teaching**

The following fields are to be completed by the Office of the Executive Vice President and Provost of the University.

CIP Code: _____

Plan Code:

ASU ARIZONA STATE UNIVERSITY

2013 - 2014 Major Map
Actuarial Science, BS (Proposed)

Term 1 0 - 14 Credit Hours Critical course signified by ◈	Hours	Minimum Grade	Notes
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: Introduction to Academic Writing or ENG 108: First-Year Composition	3	C	• An SAT, ACT, Accuplacer, or TOEFL score determines placement into first-year composition courses
◈ CIS 105: Computer Applications and Information Technology (CS)	3	C	• ASU Math Placement Exam score determines placement in Mathematics course
◈ ECN 211: Macroeconomic Principles (SB) OR ECN 212: Microeconomic Principles (SB)	3	B	• ASU 101 or College specific equivalent First Year Seminar required of all freshman students
◈ MAT 270: Calculus with Analytic Geometry I (MA)	4	C	
MAT 191: First-Year Seminar or LIA 101: Student Success in the College of Liberal Arts and Sciences	1		• CIS 105 will complete the Computer Science (CS) requirement and will fulfill prerequisite for ACT 201.
Maintain 3.50 GPA in Critical Tracking Courses.			
Term hours subtotal:	14		

Term 2 15 - 30 Credit Hours Critical course signified by ◈	Hours	Minimum Grade	Notes
◈ ACT 201: Introduction to Elements and Techniques of Actuarial Science	3	B	• COM 225 Public Speaking (L) recommended.
◈ ECN 211: Macroeconomic Principles (SB) OR ECN 212: Microeconomic Principles (SB)	3	B	• Meet with your academic advisor to reflect on your first year of classes and map our coursework towards a timely graduation.
◈ MAT 271: Calculus with Analytic Geometry II (MA)	4	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: Introduction to Academic Writing or ENG 108: First-Year Composition	3	C	• ECN 212 and 211: VEE Requirement sequence for Economics by the Society of Actuaries (SOA), Casualty Actuarial Society (CAS), and Canadian Institute of Actuaries (CIA)
Lower Division Literacy and Critical Inquiry (L)	3		
◈ Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Maintain 3.50 GPA in Critical Tracking Courses.			
Term hours subtotal:	16		

Term 3 31 - 47 Credit Hours Critical course signified by ◈	Hours	Minimum Grade	Notes
◈ MAT 272: Calculus with Analytic Geometry III (MA)	4	C	• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation.
Humanities, Fine Arts and Design (HU) AND Cultural Diversity in the U.S. (C) OR Humanities, Fine Arts and Design (HU) AND Global Awareness (G) OR Humanities, Fine Arts and Design (HU) AND Historical Awareness (H)	3		• Meet with your academic advisor to discuss summer internship and/or Research Opportunities for Undergraduates (REU)
Natural Science - Quantitative (SQ)	4		
CLAS Science and Society Elective	3	C	
Elective	3		• Students seeking VEE Accreditation, select elective from course list below.
Maintain 3.50 GPA in Critical Tracking Courses.			
◈ Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Term hours subtotal:	17		

Term 4 48 - 61 Credit Hours Critical course signified by ◈	Hours	Minimum Grade	Notes
◈ ACT 310: Mathematics of Finance	4	B	• Meet with your academic advisor to discuss options for adding a minor, certificate, or concurrent major to your degree program.
◈ MAT 343: Applied Linear Algebra	3	C	
Natural Science - Quantitative (SQ) OR Natural Science - General (SG)	4		

	Hours	Minimum Grade	Notes
Elective	3		• Students seeking VEE Accreditation, select elective from course list below.
Maintain 3.50 GPA in Critical Tracking Courses.			
Term hours subtotal:	14		

Term 5 62 - 76 Credit Hours Necessary course signified by

	Hours	Minimum Grade	Notes
ACT 415: Probability for Risk Management	3	B	• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation.
STP 420: Introductory Applied Statistics (CS)	3	C	
MAT 300: Mathematical Structures (L)	3	C	
Humanities, Fine Arts and Design (HU) AND Cultural Diversity in the U.S. (C) OR Humanities, Fine Arts and Design (HU) AND Global Awareness (G) OR Humanities, Fine Arts and Design (HU) AND Historical Awareness (H)	3		• Meet with your academic advisor to discuss post-graduation plans, e.g. graduate school, career preparation.
Elective	3		• Students seeking VEE Accreditation, select elective from course list below.
Maintain 3.00 GPA in Major Courses.			
Term hours subtotal:	15		

Term 6 77 - 91 Credit Hours Necessary course signified by

	Hours	Minimum Grade	Notes
ACT 430: Mathematics of Financial Derivatives	3	B	• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation.
MAT 371: Advanced Calculus I	3	C	
STP 427: Mathematical Statistics	3	C	
Cultural Diversity in the U.S. (C) OR Global Awareness (G) OR Historical Awareness (H)	3		• Meet with a career counselor from ASU Career Services for a review of your resume and interviewing tips for success.
Upper Division CLAS Science and Society Elective	3	C	
Maintain 3.00 GPA in Major Courses.			
Term hours subtotal:	15		

Term 7 92 - 104 Credit Hours Necessary course signified by

	Hours	Minimum Grade	Notes
ACT 440: Life Contingencies I	3	C	• Meet with your academic advisor to discuss post-graduation plans, e.g. graduate school, career preparation.
ACT 450: Actuarial Models and Modeling I	3	C	
ACT 491: Actuarial Exam Preparation Seminar	1	Y	
STP 429: Experimental Statistics (CS)	3	B	• STP 429: VEE sequence requirement for Applied Statistical Methods by the Society of Actuaries (SOA), Casualty Actuarial Society (CAS), and Canadian Institute of Actuaries (CIA)
Upper Division Literacy and Critical Inquiry (L)	3		
Maintain 3.00 GPA in Major Courses.			
Term hours subtotal:	13		

Term 8 105 - 120 Credit Hours Necessary course signified by

	Hours	Minimum Grade	Notes
ACT 441: Life Contingencies II	3	C	• Meet with your academic advisor for final degree check and apply for graduation through your My ASU.
ACT 451: Actuarial Models and Modeling II	3	C	
ACT 491: Actuarial Exam Preparation Seminar	1	Y	
Elective	6		• Students seeking VEE Accreditation, select elective from course list below.
Maintain 3.00 GPA in Major Courses.			
Upper Division Social and Behavioral Sciences (SB) OR Upper Division Humanities, Fine Arts and Design (HU)	3		
Term hours subtotal:	16		

- All students pursuing a B.S. or B.S.P. degree in the College of Liberal Arts and Sciences must complete two courses from the Science and Society list found at https://clas.asu.edu/advising-and-academic-services/science-and-society. At least one of the two courses must be upper division. Students must earn a C or better in the courses, and no more than one of the two can also be used to simultaneously fill a requirement of the major, minor or related area. Science and Society courses cannot also be used to fill the general studies HU, SB, SQ or SG requirements.
- The object of the degree is to prepare students to sit for the exams to gain certification as an actuary. One of the optional exams that individuals may take is the VEE requirements from Society of Actuaries or Casualty Actuarial Society. This exam

requires additional experience not covered in the maximum allowed for the degree. However, students may decide to take these additional courses in their 15 hours of elective credit. Consult with an academic advisor for a list of elective courses.

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum

General University Requirements Legend

General Studies Core Requirements:

- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Fine Arts and Design (HU)
- Social and Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

General Studies designations listed on the major map are current for the 2013 - 2014 academic year.

From:	Paul LePore
Sent:	Wednesday, May 08, 2013 4:35 PM
To:	curriculumplanning@asu.edu
Cc:	Jenny Smith; Paul LePore
Subject:	Proposals to establish a new undergraduate degree and a new certificate in Actuarial Science
Attachments:	M Proposal_to_Establish_New_Undergrad_Degree_ACT.docx; Major Map - Actuarial Science _04.11.13.PDF; degree support letters.pdf; M Proposal_to_Establish_an_Undergrad_Certificate_ACT.docx; Actuarial Science Certificate elective courses.docx; certificate support_Boggess.pdf

Please accept the enclosed documents as a proposal to establish a new undergraduate degree and a new certificate in Actuarial Science.

PL

PAUL C. LEPORE, Ph.D.
Associate Dean
College of Liberal Arts and Sciences
Foundation Building, Suite 110
Arizona State University | P.O. Box 876605 | Tempe, Arizona 85287-6605
480.965.6506 | Fax: 480.965.2110 | e-mail: paul.lepore@asu.edu

ASU College of Liberal Arts and Sciences — *Transforming learning, discovery and lives*

From: Jenny Smith
Sent: Wednesday, May 08, 2013 3:51 PM
To: Paul LePore
Subject: Proposals to establish a new undergraduate degree and a new certificate in Actuarial Science

Paul,

The CLAS Curriculum Committee and Senate have approved the attached proposals to establish a new BS degree and a new undergraduate certificate in Actuarial Science. Please forward these proposals with your approval to curriculumplanning@asu.edu

Thank you,
Jenny

From:	Albert Boggess [boggess@asu.edu]
Sent:	Thursday, April 11, 2013 1:06 PM
To:	Arthur Blakemore
Cc:	Jelena Milovanovic; May Boggess; Toni Garcia; Paul LePore; Jenny Smith; Tracey Hayes; Michelle Howe
Subject:	Re: actuarial degree plan

Art,

Thanks very much for your support. I'll check with WP Carey for accounting
and finance.

Best,

Al

On Thu, Apr 11, 2013 at 12:34 PM, Arthur Blakemore <Arthur.Blakemore@asu.edu> wrote:

Al

I am sorry for being late – completely forgot. I am fine with this, but have you checked with W.P. Carey about the other business classes? Since Econ is offered through CLASs well as business, it is easier to cross over and take ECN classes.

From: Albert Boggess [mailto:boggess@asu.edu]
Sent: Wednesday, April 10, 2013 5:08 PM
To: Arthur Blakemore
Subject: Fwd: actuarial degree plan

Art,

Last week, I sent you a request for a letter of support for our proposed

degree program in actuarial science (see below). Have you had a chance

to review this? If there's someone else I should interface with, please let

me know. We need the letter very soon.

Best,

Al

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From:	Amy Hillman
Sent:	Thursday, April 11, 2013 4:31 PM
To:	Al Boggess
Cc:	Paul LePore; Jelena Milovanovic; Toni Garcia; May Boggess; Michelle Howe; Tracey Hayes; Jenny Smith
Subject:	Re: clarification to earlier message regarding actuary degree program

Hello Al,

We have no objections to opening enrollment in these courses for your actuarial majors.

Amy

Amy Hillman
Rusty Lyon Chair of Strategy
Dean, W. P. Carey School of Business
Arizona State University
amy.hillman@asu.edu

From: Al Boggess <boggess@asu.edu>
Date: Thu, 11 Apr 2013 14:44:27 -0700
To: wpcarey <amy.hillman@asu.edu>
Cc: Paul LePore <Paul.LePore@asu.edu>, Jelena Milovanovic <Jelena.Milovanovic@asu.edu>, Toni Garcia <toni.c.garcia@asu.edu>, May Boggess <may.boggess@gmail.com>, Michelle Howe <michelle.howe@asu.edu>, Tracey Hayes <tracey.m.hayes@asu.edu>, Jenny Smith <jenny.smith@asu.edu>
Subject: clarification to earlier message regarding actuary degree program

Dear Amy,

Just to clarify my earlier message, our proposed actuarial degree program would require either ECN 211 or ECN 212 and would strongly recommend the following classes:

ECN 312: Intermediate Microeconomic Theory
ECN 425: Introduction to Econometrics
FIN 300: Fundamentals of Finance
ACC 231: Uses of Accounting Information I
ACC 241: Uses of Accounting Information II OR ACC 242

Sorry for the confusion. I sincerely hope you would allow our students in the proposed actuarial program to take the above courses.

Thanks...

Al

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