APPLIED MATHEMATICS - BS, ACTUARIAL SCIENCE EMPHASIS

The curriculum in the Bachelor of Science in Applied Mathematics with an Actuarial Science emphasis explores the application of analytical problem solving tools to challenges in the financial and insurance industries. Students in the Actuarial Science emphasis investigate techniques in applied and pure mathematics and pursue electives in economics and finance that demonstrate how mathematics can be used to model financial concerns in the insurance and related industries.

A student completing this program is prepared to enter employment with analytical and quantitative tools relevant to modern financial markets. Coursework in the Actuarial emphasis prepares students to take actuarial exams necessary for employment in the actuarial industry. Furthermore, with the appropriate electives chosen, the student is prepared to enter quantitatively oriented graduate schools. A minor in business or economics is well suited to students in this program. All advising for this degree option is done through the Undergraduate Program Office in the Department of Mathematics.

Program Requirements

First Year

Fall		Semester Credit Hours
ENGL 104 or ENGL 103	Composition and Rhetoric or Introduction to Rhetoric and Composition	3
MATH 171	Calculus I	4
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [1]		3
Freshman Science elective [2]		4
General elective [3,4]		1
	Semester Credit Hours	**15**

Spring		
ECON 202 or ECON 203	Principles of Economics or Principles of Economics	3
MATH 172	Calculus II	4
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [1]		3
Freshman Science elective [2]		4
General elective [3,4]		1
	Semester Credit Hours	**15**

Second Year

Fall		
MATH 221	Several Variable Calculus	4
MATH 300	Foundations of Mathematics	3
STAT 211	Principles of Statistics I	3
Select one of the following:		4
CSCE 110	Programming I	
CSCE 111	Introduction to Computer Science Concepts and Programming	
CSCE 206	Structured Programming in C	
	Semester Credit Hours	**14**

Spring		
MATH 308	Differential Equations	3
MATH 325	The Mathematics of Interest	3
STAT 212	Principles of Statistics II	3
Select one of the following:		3-4
CSCE 110	Programming I	
CSCE 111	Introduction to Computer Science Concepts and Programming	
CSCE 120	Program Design and Concepts	
CSCE 206	Structured Programming in C	
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [1]		3
	Semester Credit Hours	**15**

Third Year

Fall		
MATH 323	Linear Algebra	3
MATH 411 or STAT 414	Mathematical Probability [5] or Mathematical Statistics I	3
PHYS 206 & PHYS 226	Newtonian Mechanics for Engineering and Science and Physics of Motion Laboratory for the Sciences	4
Select 3 hours from the following:		3
ECMT 463	Introduction to Econometrics	
ECON 311-489 (http://catalog.tamu.edu/undergraduate/course-descriptions/econ/)		
FINC 309-489 (http://catalog.tamu.edu/undergraduate/course-descriptions/finc/)		
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [1]		3
	Semester Credit Hours	**16**

Spring		
MATH 409	Analysis on the Real Line	3
MATH 419	Applications of Actuarial Science	3
Select 3 hours from the following:		3
ECMT 463	Introduction to Econometrics	
ECON 311-489 (http://catalog.tamu.edu/undergraduate/course-descriptions/econ/)		
FINC 309-489 (http://catalog.tamu.edu/undergraduate/course-descriptions/finc/)		
Select one of the following:		4
OCNG 451	Mathematical Modeling of Ocean Climate	
PHYS 207 & PHYS 227	Electricity and Magnetism for Engineering and Science and Electricity and Magnetism Laboratory for the Sciences	

University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [1]		3
	Semester Credit Hours	**16**
Fourth Year		
Fall		
MATH 425	The Mathematics of Contingent Claims	3
Select 3 hours from the following:		3
CSCE 210-470 (http://catalog.tamu.edu/undergraduate/course-descriptions/csce/) [6]		
ISEN 320	Operations Research I	
ISEN 340	Operations Research II	
MATH 407-499 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)		
STAT 335-482 (http://catalog.tamu.edu/undergraduate/course-descriptions/stat/)		
Select 3 hours from the following:		3
ECMT 463	Introduction to Econometrics	
ECON 311-489 (http://catalog.tamu.edu/undergraduate/course-descriptions/econ/)		
FINC 309-489 (http://catalog.tamu.edu/undergraduate/course-descriptions/finc/)		
Select one of the following:		3
COMM 203	Public Speaking	
COMM 205	Communication for Technical Professions	
COMM 243	Argumentation and Debate	
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [1]		3
	Semester Credit Hours	**15**
Spring		
MATH 437	Principles of Numerical Analysis	4
Select 3 hours from the following:		3
CSCE 210-470 (http://catalog.tamu.edu/undergraduate/course-descriptions/csce/) [6]		
ISEN 320	Operations Research I	
ISEN 340	Operations Research II	
MATH 407-499 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)		
STAT 335-482 (http://catalog.tamu.edu/undergraduate/course-descriptions/stat/)		
General elective [3,4]		6-7
	Semester Credit Hours	**14**
	Total Semester Credit Hours	**120**

1. Of the 18 hours shown as University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/), 3 must be from Language, Philosophy and Culture; 3 from Creative Arts; 6 from American History; and 6 from Government/Political Science.
2. Select 4 hours from ASTR 111, BIOL 111, BIOL 112, CHEM 119, CHEM 120, CHEM 107, CHEM 117. The remaining 4 hours may be selected from ASTR 111, ATMO 201/ATMO 202, BIOL 111, BIOL 112, CHEM 119, CHEM 120, CHEM 107/CHEM 117, GEOL 101/GEOL 102, OCNG 251/OCNG 252.
3. MATH 170 is highly recommended for math majors co-enrolled in MATH 150, MATH 151, MATH 152, MATH 171 or MATH 172. MATH 200 is also highly recommended for math majors co-enrolled in MATH 151, MATH 152, MATH 171 or MATH 172.
4. Select from any 100-499 course not used elsewhere (except ALED 125; ASCC 102; ASTR 109/PHYS 109, ASTR 119/PHYS 119; BMEN 153; KINE 199; LAND 101; MATH 102-148, MATH 151-168 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/), MATH 304, MATH 309, MATH 311, MATH 365, MATH 366, MATH 367, MATH 375, MATH 376; PBSI 301 PHYS 201, PHYS 202, PHYS 205; STAT 201, STAT 301 - 303 (http://catalog.tamu.edu/undergraduate/course-descriptions/stat/)).
5. MATH 411 should be taken the semester after taking MATH 221.
6. Except CSCE 222/ECEN 222, CSCE 285, CSCE 289, CSCE 291, CSCE 402.

Maximum of 3 hours of MATH 300 or CSCE 222/ECEN 222 may be used in this degree program.

Maximum of 3 hours of MATH 411 or STAT 414 may be used in this degree program.

Maximum of 4 hours of MATH 417, MATH 437 or CSCE 442 may be used in this degree program.

If a grade of D or F is earned in any of the following courses, MATH 151/MATH 171, MATH 152/MATH 172, MATH 221/MATH 251/MATH 253, MATH 300, MATH 323 or MATH 308, this course must be immediately retaken and a grade of C or better earned. The department will allow at most two grades of D in upper-level (325-499) courses. If a third D is earned, one of the three courses in which a D was earned must be retaken and a grade of C or better earned.

Students desiring teacher certification should consult the requirements for certification before registering for electives.

Graduation requirements include a requirement for 3 hours of International and Cultural Diversity courses (http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/) and 3 hours of Cultural Discourse (http://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/) courses. A course satisfying a Core category, a college/department requirement, or a general elective can be used to satisfy this requirement. See academic advisor.