APPLIED MATHEMATICAL SCIENCES - BS, ACTUARIAL EMPHASIS

Many advances in technology and business are achieved by people applying technical knowledge from statistics, computing science, finance, economics and mathematics. The curriculum in applied mathematical sciences provides study in all of these areas, with ample electives available to allow further in-depth study of any of these areas. In fact, there are six emphases in this curriculum: Applied Mathematics, Statistics, Actuarial Science, Economics, Biological Science and Scientific Computing. The Actuarial Science emphasis includes mathematical finance.

A student completing this program is prepared to enter employment with analytical and quantitative tools relevant to technological industries and/or modern financial markets. On the other hand, with the appropriate electives chosen, the student is prepared to enter quantitatively oriented graduate schools. 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 Composition and Rhetoric 3
MATH 171 Analytic Geometry and Calculus 4
Select one of the following: 4
CSCE 110 Programming I
CSCE 111 Introduction to Computer Science Concepts and Programming
CSCE 121 Introduction to Program Design and Concepts
CSCE 206 Structured Programming in C

Spring
HIST 105 History of the United States 3
MATH 172 Calculus 4
Select one of the following: 4
CSCE 110 Programming I
CSCE 111 Introduction to Computer Science Concepts and Programming

Second Year

Fall  Semester Credit Hours
ECON 202 or ECON 203 Principles of Economics 3
HIST 106 History of the United States 3
MATH 220 Foundations of Mathematics 3
MATH 221 Several Variable Calculus 4
STAT 211 Principles of Statistics I 3

Spring  Semester Credit Hours
MATH 308 Differential Equations 3
MATH 323 Linear Algebra 3
POLS 206 American National Government 3
STAT 212 Principles of Statistics II 3
Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture) 2

Third Year

Fall  Semester Credit Hours
MATH 325 The Mathematics of Interest 3
MATH 411 or STAT 414 Mathematical Probability 3
MATH 425 The Mathematics of Contingent Claims 3
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) 3
Elective hours 4

Spring  Semester Credit Hours
MATH 417 or MATH 437 Numerical Methods or Principles of Numerical Analysis 4
PHYS 208 or OCN 451 Electricity and Optics or Mathematical Modeling of Ocean Climate 4
MATH 419 Applications of Actuarial Science 2
Elective hours 4

Elective Hours 1

Semester Credit Hours 16

### Fourth Year

**Fall**

Select six hours from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Notes</th>
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<tbody>
<tr>
<td>MATH 407-MATH 499</td>
<td>[<a href="http://catalog.tamu.edu/undergraduate/course-descriptions/math">http://catalog.tamu.edu/undergraduate/course-descriptions/math</a>]</td>
</tr>
<tr>
<td>STAT 407-STAT 415</td>
<td>[<a href="http://catalog.tamu.edu/undergraduate/course-descriptions/stat">http://catalog.tamu.edu/undergraduate/course-descriptions/stat</a>]</td>
</tr>
<tr>
<td>CSCE 210-CSCE 470</td>
<td>[<a href="http://catalog.tamu.edu/undergraduate/course-descriptions/csce">http://catalog.tamu.edu/undergraduate/course-descriptions/csce</a>]</td>
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Select nine hours from the following:

<table>
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<tbody>
<tr>
<td>ISEN 320 or ISEN 340</td>
<td>[<a href="http://catalog.tamu.edu/undergraduate/course-descriptions/isen">http://catalog.tamu.edu/undergraduate/course-descriptions/isen</a>]</td>
</tr>
<tr>
<td>ECON 311-ECON 489</td>
<td>[<a href="http://catalog.tamu.edu/undergraduate/course-descriptions/econ">http://catalog.tamu.edu/undergraduate/course-descriptions/econ</a>]</td>
</tr>
<tr>
<td>FINC 309-FINC 489</td>
<td>[<a href="http://catalog.tamu.edu/undergraduate/course-descriptions/finc">http://catalog.tamu.edu/undergraduate/course-descriptions/finc</a>]</td>
</tr>
<tr>
<td>ECMT 463</td>
<td>Introduction to Econometrics</td>
</tr>
</tbody>
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| Semester Credit Hours | 15 |

**Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>MATH 409</td>
<td>Advanced Calculus I</td>
</tr>
<tr>
<td>POLS 207</td>
<td>State and Local Government</td>
</tr>
<tr>
<td>PHYS 218</td>
<td>Mechanics</td>
</tr>
<tr>
<td>Creative arts</td>
<td>[<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts</a>]</td>
</tr>
</tbody>
</table>

| Semester Credit Hours | 13 |

Total Semester Credit Hours: 120

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1. MATH 170 is highly recommended for math majors co-enrolled in MATH 150, MATH 151, MATH 152, MATH 171 or MATH 172.
2. Select 3 hours from any 200-400 level course.
3. MATH 411 should be taken the semester after taking MATH 221.
4. Three elective hours must be chosen from the approved University Core Curriculum ([http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum](http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum)) list for creative arts. In addition, 6 hours of courses must be in the area of International and Cultural Diversity ([http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements](http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements)). These may be in addition to University Core Curriculum ([http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum](http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum)) courses, or if a course in this category satisfies an area of the Core, it can be used to meet both requirements. Students desiring teacher certification should consult the requirements for certification before registering for electives. Remaining electives may be selected from any 100-499 course not used elsewhere, (except ALED 125; ASTR 109/PHYS 109; ASTR 119/PHYS 119; BMEN 101; BUSN 100; ISEN 101; KINE 199; LAND 101; MATH 102-166; PHYS 109/ASTR 109; PHYS 119/ASTR 119; PHYS 201; PHYS 202; PHYS 205; PSYC 301; STAT 201; STAT 301-303; STLC 102; URPN 200; WFSC 101).

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

Maximum of 3 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 220, 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 D’s 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.