

# APPLIED MATHEMATICAL SCIENCES - BS, CRYPTOGRAPHY EMPHASIS

## Program Requirements

### First Year

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

### Spring

ECON 202 Principles of Economics or ECON 203 or Principles of Economics	3
MATH 172 Calculus II	4
University Core Curriculum ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a> ) <sup>1</sup>	3
Freshman Science elective <sup>2</sup>	4
General elective <sup>3,4</sup>	1
<b>Semester Credit Hours</b>	<b>15</b>

### Second Year

	Semester Credit Hours
<b>Fall</b>	
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	
<b>Semester Credit Hours</b>	<b>14</b>

### Spring

CSCE 121 Introduction to Program Design and Concepts	4
MATH 308 Differential Equations	3
MATH 323 Linear Algebra	3
STAT 212 Principles of Statistics II	3
University Core Curriculum ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a> ) <sup>1</sup>	3
<b>Semester Credit Hours</b>	<b>16</b>

### Third Year

	Semester Credit Hours
<b>Fall</b>	
MATH 409 Advanced Calculus I	3
MATH 470 Communications and Cryptography	3
PHYS 206 Newtonian Mechanics for Engineering and Science & PHYS 226 and Physics of Motion Laboratory for the Sciences	4
University Core Curriculum ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a> ) <sup>1</sup>	3
General Elective <sup>4</sup>	1
<b>Semester Credit Hours</b>	<b>14</b>

### Spring

MATH 415 Modern Algebra I <sup>5</sup> or MATH 433 or Applied Algebra	3
MATH 471 Communications and Cryptography II	3
Select one of the following:	4
OCNG 451 Mathematical Modeling of Ocean Climate	
PHYS 207 Electricity and Magnetism for Engineering and Science & PHYS 227 and Electricity and Magnetism Laboratory for the Sciences	
University Core Curriculum ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a> ) <sup>1</sup>	3
General elective <sup>4</sup>	3
<b>Semester Credit Hours</b>	<b>16</b>

### Fourth Year

	Semester Credit Hours
<b>Fall</b>	
MATH 427 Introduction to Number Theory or MATH 431 or Structures and Methods of Combinatorics	3
MATH 472 Elliptic Curve Cryptography	3
Select 3 hours from the following:	3
CSCE 210-470 ( <a href="http://catalog.tamu.edu/undergraduate/course-descriptions/csce/">http://catalog.tamu.edu/undergraduate/course-descriptions/csce/</a> ) <sup>6</sup>	
ISEN 320 Operations Research I	
ISEN 340 Operations Research II	
MATH 325 The Mathematics of Interest	
MATH 407-499 ( <a href="http://catalog.tamu.edu/undergraduate/course-descriptions/math/">http://catalog.tamu.edu/undergraduate/course-descriptions/math/</a> )	
STAT 335-482 ( <a href="http://catalog.tamu.edu/undergraduate/course-descriptions/stat/">http://catalog.tamu.edu/undergraduate/course-descriptions/stat/</a> )	
Select one of the following:	3
COMM 203 Public Speaking (Select one of the following:)	
COMM 205 Communication for Technical Professions	
COMM 243 Argumentation and Debate (Elective)	
General elective <sup>4</sup>	3
<b>Semester Credit Hours</b>	<b>15</b>
<b>Spring</b>	
MATH 411 Mathematical Probability	3
Select 3 hours from the following:	3

CSCE 210-470 ( <a href="http://catalog.tamu.edu/undergraduate/course-descriptions/csce/">http://catalog.tamu.edu/undergraduate/course-descriptions/csce/</a> ) <sup>6</sup>	
MATH 325	The Mathematics of Interest
MATH 407-499 ( <a href="http://catalog.tamu.edu/undergraduate/course-descriptions/math/">http://catalog.tamu.edu/undergraduate/course-descriptions/math/</a> )	
Select 3 hours from the following:	3
CSCE 210-470 ( <a href="http://catalog.tamu.edu/undergraduate/course-descriptions/csce/">http://catalog.tamu.edu/undergraduate/course-descriptions/csce/</a> ) <sup>6</sup>	
ISEN 320	Operations Research I
ISEN 340	Operations Research II
MATH 325	The Mathematics of Interest
MATH 407-499 ( <a href="http://catalog.tamu.edu/undergraduate/course-descriptions/math/">http://catalog.tamu.edu/undergraduate/course-descriptions/math/</a> )	
STAT 335-482 ( <a href="http://catalog.tamu.edu/undergraduate/course-descriptions/stat/">http://catalog.tamu.edu/undergraduate/course-descriptions/stat/</a> )	
University Core Curriculum ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a> ) <sup>1</sup>	3
General elective <sup>4</sup>	3
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Semester Credit Hours	15
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Total Semester Credit Hours	120

<sup>1</sup> 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, 6 from Government/Political Science.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> Select from any 100-499 course not used elsewhere, (except ALED 125; ASCC 102; ASTR 109/PHYS 109, ASTR 119/PHYS 119; BMEN 153; ISEN 101; 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; PHYS 201, PHYS 202, PHYS 205; PSYC 301; STAT 201, STAT 301-303 (<http://catalog.tamu.edu/undergraduate/course-descriptions/stat/>); WFSC 101).

<sup>5</sup> MATH 433 is only offered in Spring semesters.

<sup>6</sup> Except CSCE 222/ECEN 222, CSCE 285, CSCE 289, CSCE 291.

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 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.

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 course (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/>)s 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.