APPLIED MATHEMATICS - 5-YEAR BACHELOR OF SCIENCE AND MASTER OF SCIENCE IN MATHEMATICS

The combined program enables ambitious and academically talented mathematics majors at Texas A&M University to earn both a bachelor's degree and a master's degree within a period of five years after entering Texas A&M. The curriculum in the Bachelor of Science in Applied Mathematics 5-year program explores the application of analytical problem solving tools to concrete problems in technology and business. Students in this program investigate a broad array of techniques in applied and pure mathematics and pursue electives in related fields, such as computer science and statistics, that demonstrate how mathematics models challenges we face every day.

Among the various advantages of the combined program, upon its completion a student will be in an exceptionally strong position to enter:

- The professional industrial job marketplace;
- A career in secondary education;
- A doctoral program in mathematics, or in a related discipline, at Texas A&M or another university.

The related disciplines include computer science, engineering, physics, statistics, genetics, economics, business administration, education, and biology.

Eligibility for entering a doctoral program in one of these disciplines would depend in part on the undergraduate and graduate external options and areas of emphasis that were reflected in a student's individual degree plan.

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
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	
Freshman Science elective [1]		4
General elective [2,3]		1
	Semester Credit Hours	**16**
Spring		
MATH 172	Calculus II	4
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/) [4]		3
Freshman Science elective [1]		4
General elective [2,3]		1
	Semester Credit Hours	**15**
Second Year		
Fall		
ECON 202 or ECON 203	Principles of Economics or Principles of Economics	3
MATH 221	Several Variable Calculus	4
MATH 300	Foundations of Mathematics	3
STAT 211	Principles of Statistics I	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [4]		3
	Semester Credit Hours	**16**
Spring		
MATH 308	Differential Equations	3
MATH 323	Linear Algebra	3
STAT 212	Principles of Statistics II	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [4]		3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [4]		3
	Semester Credit Hours	**15**
Third Year		
Fall		
MATH 409	Analysis on the Real Line	3
MATH 410 or MATH 446	Multivariate Real Analysis or Analysis on Metric Spaces	3
PHYS 206 & PHYS 226	Newtonian Mechanics for Engineering and Science and Physics of Motion Laboratory for the Sciences	4
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [4]		3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [4]		3
	Semester Credit Hours	**16**
Spring		
MATH 417 or MATH 437	Numerical Methods or Principles of Numerical Analysis	4
MATH 415 or MATH 433	Modern Algebra I or Applied Algebra	3
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	
General elective [3]		4
	Semester Credit Hours	**15**

Fourth Year

Fall

Select one of the following:		3
COMM 203	Public Speaking	
COMM 205	Communication for Technical Professions	
COMM 243	Argumentation and Debate	
Select one of the following:		3
MATH 412	Theory of Partial Differential Equations	
MATH 414	Fourier Series and Wavelets	
MATH 442	Mathematical Modeling	
MATH 469	Introduction to Mathematical Biology	
MATH 470	Communications and Cryptography	
MATH 471	Communications and Cryptography II	
MATH 472	Elliptic Curve Cryptography	
Select 6 hours from the following:		6
CSCE 210-470 (http://catalog.tamu.edu/undergraduate/course-descriptions/csce/) [5]		
ISEN 320 or ISEN 340	Operations Research I or Operations Research II	
MATH 325	The Mathematics of Interest	
MATH 407-499 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)		
STAT 335-482 (http://catalog.tamu.edu/undergraduate/course-descriptions/stat/)		
	Semester Credit Hours	**12**

Spring

Select 3 hours from the following:		3
MATH 325	The Mathematics of Interest	
MATH 407-499 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)		
Select 6 hours from the following: [6]		6
MATH 603-628 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)		
MATH 630-639 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)		
MATH 641-644 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)		
MATH 647-684 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)		
General elective [3]		5-6
	Semester Credit Hours	**15**
	Total Semester Credit Hours	**120**

Fifth Year

Fall		**Semester Credit Hours**
Graduate Degree [7]		36
	Semester Credit Hours	**36**
	Total Semester Credit Hours	**36**

1. 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.
2. MATH 170 is highly recommended for math majors co-enrolled in MATH 150, MATH 151, MATH 152, MATH 171 or MATH 172.
3. 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; PBSI 301; PHYS 109/ASTR 109, PHYS 119/ASTR 119, PHYS 201, PHYS 202, PHYS 205; STAT 201, STAT 301 - 303 (http://catalog.tamu.edu/undergraduate/course-descriptions/stat/)).
4. 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.
5. Except CSCE 222/ECEN 222, CSCE 285, CSCE 289, CSCE 291.
6. This 6 hours will be applied towards both BS and MS degrees in Mathematics.
7. The overall program hours (156 hours) includes 36 hours for a non-thesis option or 32 hours for a thesis option (up to six of which are MATH 691). Up to six hours of graduate courses may double count. MATH 601 is prohibited for all graduate degree plans. Except for the MS teaching track, no distance class may be used on the degree plan nor may MATH 696 appear. For the MS teaching track, students must take four distance courses: MATH 629, MATH 645, MATH 646 and MATH 696. All five tracks require at least 24 credit hours of mathematics of which at most six may be undergraduate. Depending on the MS track, courses outside of mathematics may be required or optional. For additional information, reference the department website and select the track of interest.

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.