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

The combined degree 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 Mathematics 5-year combined program explores mathematical problems and their interplay with science and engineering. Students in this program investigate a broad array of techniques in pure mathematics and pursue electives in science and related fields that demonstrate the crucial underpinnings of mathematics in our understanding of information, science, and technology.

Among the various advantages of the 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
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		
MATH 172	Calculus II	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	
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	**16**
Second Year		
Fall		
MATH 221	Several Variable Calculus	4
MATH 300	Foundations of Mathematics	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [1]		3
Science elective [5]		4
	Semester Credit Hours	**14**
Spring		
MATH 308	Differential Equations	3
MATH 323	Linear Algebra	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/) [1]		3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [1]		3
	Semester Credit Hours	**16**
Third Year		
Fall		
MATH 409	Analysis on the Real Line	3
MATH 415	Modern Algebra I	3
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
Science elective [5]		3
	Semester Credit Hours	**15**
Spring		
MATH 410 or MATH 446	Multivariate Real Analysis or Analysis on Metric Spaces	3
MATH 416 or MATH 472	Modern Algebra II or Elliptic Curve Cryptography	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	

University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [1]		3
	Semester Credit Hours	**13**
Fourth Year		
Fall		
MATH 411 or STAT 414	Mathematical Probability or Mathematical Statistics I	3
Select one of the following:		3
MATH 427	Introduction to Number Theory	
MATH 431	Structures and Methods of Combinatorics	
MATH 436	Introduction to Topology	
MATH 439	Differential Geometry of Curves and Surfaces	
Science elective [5]		3
General elective [4]		3
General elective [4]		4
	Semester Credit Hours	**16**
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/graduate/course-descriptions/math/)		
MATH 630-639 (http://catalog.tamu.edu/graduate/course-descriptions/math/)		
MATH 641-644 (http://catalog.tamu.edu/graduate/course-descriptions/math/)		
MATH 647-684 (http://catalog.tamu.edu/graduate/course-descriptions/math/)		
General elective [4]		6
	Semester Credit Hours	**15**
	Total Semester Credit Hours	**120**

Fifth Year

Fall		**Semester Credit Hours**
Graduate Degree [7]		32 or 36
	Semester Credit Hours	**32-36**
	Total Semester Credit Hours	**32-36**

1. Of the 21 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, 3 from social and behavioral sciences, 6 from American history, 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.
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; PHYS 109/ASTR 109, PBSI 301; PHYS 119/ASTR 119, PHYS 201, PHYS 202, PHYS 205; STAT 201, STAT 301 - 303 (http://catalog.tamu.edu/undergraduate/course-descriptions/stat/)).
5. Four (4) hours must be selected from ATMO 335, ATMO 336, ATMO 435; ASTR 111; BICH 401-489 (http://catalog.tamu.edu/undergraduate/course-descriptions/bich/); BIOL 111, 112, 200-470, 318-438 (http://catalog.tamu.edu/undergraduate/course-descriptions/biol/); CHEM 119, 120, 222-474 (http://catalog.tamu.edu/undergraduate/course-descriptions/chem/); CSCE 110, CSCE 111, CSCE 206, CSCE 221; GENE 301-452 (http://catalog.tamu.edu/undergraduate/course-descriptions/gene/); OCNG 251-252, (http://catalog.tamu.edu/undergraduate/course-descriptions/ocng/)OCNG 310, OCNG 320, OCNG 330, OCNG 340, OCNG 411, OCNG 425, OCNG 443, OCNG 451, OCNG 453; PHYS 221, (http://catalog.tamu.edu/undergraduate/course-descriptions/phys/)PHYS 222, PHYS 302-305, 307-314, 324-428 (http://catalog.tamu.edu/undergraduate/course-descriptions/phys/).
   Six (6) hours must be selected from ATMO 335, ATMO 336, ATMO 435; BICH 401-489 (http://catalog.tamu.edu/undergraduate/course-descriptions/bich/); BIOL 200-470 (http://catalog.tamu.edu/undergraduate/course-descriptions/biol/); CHEM 222-474 (http://catalog.tamu.edu/undergraduate/course-descriptions/chem/); CSCE 120, CSCE 320/STAT 335, CSCE 411, CSCE 421; GENE 301-452 (http://catalog.tamu.edu/undergraduate/course-descriptions/gene/); OCNG 251-252, (http://catalog.tamu.edu/undergraduate/course-descriptions/ocng/) OCNG 310, OCNG 320, OCNG 330, OCNG 340, OCNG 411, OCNG 425, OCNG 443, OCNG 451, OCNG 453; PHYS 221, PHYS 222, PHYS 302-305, 307-314, 324-428 (http://catalog.tamu.edu/undergraduate/course-descriptions/phys/); STAT 211, STAT 212, STAT 335/CSCE 320, STAT 408, STAT 421.
6. For students in the MS Non-Thesis Track, these 6 hours will be used towards both the BS and MS degrees in Mathematics. For students in the MS Thesis Track, 2 of these hours will be used towards both the BS and MS degrees in Mathematics the remaining 4 hours to be selected from MATH 407-499 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/).
7. 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 for the Non-Thesis Track and up to two hours of graduate courses may double count for the Thesis Track. 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 (http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/) courses 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.

The program includes a total of 152 hours (Thesis Track) or 156 hours (Non-Thesis Track). The Thesis track allows up to 2 hours of graduate coursework to be applied toward both the Bachelor of Science in Mathematics and the Master of Science in Mathematics face-to-face program. The Non-Thesis track allows up to 6 hours of graduate coursework to be applied toward both the Bachelor of Science in Mathematics and the Master of Science in Mathematics face-to-face program.