

APPLIED MATHEMATICAL SCIENCES - BS, COMPUTATIONAL 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 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

CSCE 121	Introduction to Program Design and Concepts	4
MATH 172	Calculus II	4
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		16

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	Advanced Calculus I	3
MATH 415 or MATH 433	Modern Algebra I or Applied 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/) ⁴		3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ⁴		3

Semester Credit Hours 16

Spring

CSCE 221	Data Structures and Algorithms	4
Select one from:		4
CSCE 442	Scientific Programming	
MATH 417	Numerical Methods	
MATH 437	Principles of Numerical Analysis	

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	

Semester Credit Hours 12

Fourth Year

Fall

CSCE 314	Programming Languages	3
CSCE 411	Design and Analysis of Algorithms	3
CSCE 433	Formal Languages and Automata	3
Select one of the following:		3
COMM 203	Public Speaking	
COMM 205	Communication for Technical Professions	
COMM 243	Argumentation and Debate	

Semester Credit Hours 12

Spring

Select one of the following:	3
ISEN 320 Operations Research I	
ISEN 340 Operations Research II	
MATH 325 The Mathematics of Interest	
CSCE 210-470 (http://catalog.tamu.edu/undergraduate/course-descriptions/csce/) ⁵	
MATH 407-499 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)	
STAT 335-482 (http://catalog.tamu.edu/undergraduate/course-descriptions/stat/)	
Select from the following:	9
MATH 325 The Mathematics of Interest	
MATH 407-499 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/)	
General elective ³	5
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Semester Credit Hours	17
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Total Semester Credit Hours	120

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 101; ISEN 101; KINE 199; LAND 101; MATH 102-148, MATH 151-166 (<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, PHYS 119/ASTR 119, PHYS 201, PHYS 202, PHYS 205; PSYC 301; STAT 201, STAT 301, STAT 302, STAT 303; WFSC 101).

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.

Maximum of 3 hours of MATH 300 or CSCE 222/ECEN 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.