

# APPLIED MATHEMATICS - BS, COMPUTATIONAL SCIENCE EMPHASIS

## Program Requirements

### First Year

Fall		Semester	Credit
		Hours	Hours
ENGL 104 or ENGL 103	Composition and Rhetoric 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>2</sup>		3	
Freshman Science elective <sup>1</sup>		4	
General elective <sup>3,4</sup>		1	
<b>Semester Credit Hours</b>		<b>15</b>	

### Spring

ECON 202 or ECON 203	Principles of Economics 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>2</sup>		3	
Freshman Science elective <sup>1</sup>		4	
General elective <sup>3,4</sup>		1	
<b>Semester Credit Hours</b>		<b>15</b>	

### Second Year

Fall		Semester	Credit
		Hours	Hours
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 120	Program Design and Concepts	3	
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>2</sup>		3	
<b>Semester Credit Hours</b>		<b>15</b>	

### Third Year

Fall		Semester	Credit
		Hours	Hours
CSCE 221	Data Structures and Algorithms	4	
MATH 409	Analysis on the Real Line	3	
PHYS 206 & PHYS 226	Newtonian Mechanics for Engineering and Science and Physics of Motion Laboratory for the Sciences	4	
Select 3 hours from the following:		3	
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> )			
<b>Semester Credit Hours</b>		<b>14</b>	

### Spring

CSCE 314	Programming Languages	3	
MATH 437	Principles of Numerical Analysis	4	
Select 3 hours from the following:		3	
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 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		
<b>Semester Credit Hours</b>		<b>14</b>	

### Fourth Year

Fall		Semester	Credit
		Hours	Hours
CSCE 411	Design and Analysis of Algorithms	3	
MATH 415 or MATH 433	Modern Algebra I or Applied Algebra	3	
Select 3 hours from the following:		3	
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 one of the following:		3	
COMM 203	Public Speaking		
COMM 205	Communication for Technical Professions		
COMM 243	Argumentation and Debate		
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>2</sup>		3	
General Elective <sup>4</sup>		1	
<b>Semester Credit Hours</b>		<b>16</b>	

### Spring

CSCE 433	Formal Languages and Automata	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>5</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>2</sup>	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>2</sup>	3
General elective <sup>4</sup>	5
<b>Semester Credit Hours</b>	<b>17</b>
<b>Total Semester Credit Hours</b>	<b>120</b>

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.

- <sup>1</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>2</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; and 6 from Government/Political Science.
- <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; 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 201, PHYS 202, PHYS 205; STAT 201, STAT 301, STAT 302, STAT 303).
- <sup>5</sup> Except CSCE 222/ECEN 222, CSCE 285, CSCE 289, CSCE 291, CSCE 402.

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 grades of D 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->