



BS in MATHEMATICS: Applied and Computational Mathematics Emphasis (694432) MAP Sheet

Department of Mathematics

For students entering the degree program during the 2016–2017 curricular year.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				PROGRAM REQUIREMENTS (70 total hours)			
UNIVERSITY CORE REQUIREMENTS							
<u>Requirements</u>	<u>#Classes</u>	<u>Hours</u>	<u>Classes</u>				
Religion Cornerstones				Complete the following pre-core requirements before junior year:			
Teachings and Doctrine, Book of Mormon	1	2.0	Rel A 275	C S 142	Introduction to Computer Programming	3.0	
Jesus Christ & the Everlasting Gospel	1	2.0	Rel A 250	Math 112*	Calculus 1	4.0	
Foundations of the Restoration	1	2.0	Rel C 225	Math 113*	Calculus 2	4.0	
The Eternal Family	1	2.0	Rel C 200	Math 290	Fundamentals of Mathematics	3.0	
The Individual and Society				Math 313	Elementary Linear Algebra	3.0	
Citizenship				Math 314	Calculus of Several Variables	3.0	
American Heritage	1–2	3–6.0	from approved list	Math 334	Ordinary Differential Equations	3.0	
Global & Cultural Awareness	1	3.0	from approved list	Math 341	Theory of Analysis 1	3.0	
Skills				Complete the following core requirements during fall semester, junior year:			
Effective Communication				Math 320	Algorithm Design and Optimization 1	3.0	
First-Year Writing	1	3.0	from approved list	Math 321	Algorithm Design and Optimization 1 Lab	1.0	
Adv Written & Oral Communication	1	3.0	from approved list	Math 344	Mathematical Analysis 1	3.0	
Quantitative Reasoning	1	4.0	Math 112* or 113*	Math 345	Mathematical Analysis 1 Lab	1.0	
Languages of Learning (Math or Language)	1	4.0	Math 112* or 113*	Complete the following core requirements during winter semester, junior year:			
Arts, Letters, and Sciences				Math 322	Algorithm Design and Optimization 2	3.0	
Civilization 1 and 2	2	6.0	from approved list	Math 323	Algorithm Design and Optimization 2 Lab	1.0	
Arts	1	3.0	from approved list	Math 346	Mathematical Analysis 2	3.0	
Letters	1	3.0	from approved list	Math 347	Mathematical Analysis 2 Lab	1.0	
Scientific Principles & Reasoning				Complete the following core requirements during fall semester, senior year:			
Biological Science	1	3.0	from approved list	Math 402	Modeling with Uncertainty and Data 1	3.0	
Physical Science	1–2	3–7.0	from approved list	Math 403	Modeling with Uncertainty and Data 1 Lab	1.0	
Social Science	1	3.0	from approved list	Math 436	Modeling with Dynamics and Control 1	3.0	
Core Enrichment: Electives				Math 437	Modeling with Dynamics and Control 1 Lab	1.0	
Religion Electives	3–4	6.0	from approved list	Completion of an internship in the summer term between the junior and senior years is strongly recommended.			
Open Electives	Variable	Variable	personal choice				
GRADUATION REQUIREMENTS:							
Minimum residence hours required		30.0					
Minimum hours needed to graduate		120.0					

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (4 hours overlap)

FOR UNIVERSITY CORE OR PROGRAM QUESTIONS CONTACT THE ADVISEMENT CENTER
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 Brigham Young University, Provo, UT 84602
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Suggested Sequence of Courses:

FRESHMAN YEAR

1st Semester

1 st Year Writing	3.0
or A Htg 100	(3.0)
Math 112 (FWSpSu)	4.0
Math 290 (FWSu)	3.0
Biological Science	3.0
Religion Cornerstone course	2.0
Total Hours	15.0

2nd Semester

A Htg 100	3.0
or 1 st Year Writing	(3.0)
C S 142 (FWSpSu)	3.0
Math 113 (FWSpSu)	4.0
Math 313 (FWSpSu)	3.0
Religion Cornerstone course	2.0
Total Hours	15.0

SOPHOMORE YEAR

3rd Semester

Math 314 (FWSpSu)	3.0
Math 341 (FW)	3.0
Econ 110 (Social Science)	3.0
Religion Cornerstone course	2.0
A.C.M.E. Concentration requirement	3.0
Total Hours	14.0

4th Semester

Math 334 (FWSpSu)	3.0
A.C.M.E. Concentration requirement	3.0
Civilization 1	3.0
Phy S 100 (Physical Science)	3.0
Religion Cornerstone course	2.0
Total Hours	14.0

Note: Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.

JUNIOR YEAR

5th Semester

Math 320 (F)	3.0
Math 321 (F)	1.0
Math 344 (F)	3.0
Math 345 (F)	1.0
Advanced Written & Oral Communication	3.0
A.C.M.E. Concentration requirement	3.0
Religion Elective	2.0
Total Hours	16.0

6th Semester

Math 322 (W)	3.0
Math 323 (W)	1.0
Math 346 (W)	3.0
Math 347 (W)	1.0
Civilization 2/Arts	3.0
Religion Elective	2.0
A.C.M.E. Concentration requirement	3.0
Total Hours	16.0

7th Semester (Spring-Summer)

An internship or mentored research project is strongly recommended.

SENIOR YEAR

8th Semester

Math 402 (F)	3.0
Math 403 (F)	1.0
Math 436 (F)	3.0
Math 437 (F)	1.0
Letters	3.0
A.C.M.E. Concentration requirement	3.0
Total Hours	14.0

9th Semester

Math 404 (W)	3.0
Math 405 (W)	1.0
Math 438 (W)	3.0
Math 439 (W)	1.0
Religion Elective	2.0
Global & Cultural Awareness	3.0
General Elective	3.0
Total Hours	16.0

INTERNSHIP COORDINATOR:

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THE DISCIPLINE:

Mathematics is a means of dealing with order, pattern, and number as seen in the world around us. The abilities to compute, to think logically, and to take a reasoned approach to solving problems are highly valued in society and are characteristics of any educated person. Mathematics is not just a body of knowledge, but a process of analysis, reasoning, comparison, deduction, generalization, and problem solving.

A mathematician's stock in trade is the ability to solve problems and to explain the solutions to others. Having once determined what the right questions are, solving problems involves analyzing both concrete and abstract situations, relating them to mathematical ideas and using mathematical techniques to work toward solutions. Explaining the solution involves pointing out what has been solved and why the solution is valid.

The Applied and Computational Mathematics Emphasis is designed to give students a solid education in mathematics and, in addition, to prepare them to apply mathematical theory to problems that arise in other contexts. They will gain experience in problem formulation, data analysis, computation, and interpreting their results in the context in which the problems arose. The concentration requirement provides them with contextual knowledge which will enable them to identify interesting problems and to implement their results.

CAREER OPPORTUNITIES:

Majors in mathematics (BS) prepare for a wide variety of careers. Some enter graduate school or professional schools and prepare for careers in such fields as college teaching, consulting, research and development, law, medicine, and business administration. Others take positions in government agencies, industrial laboratories, information management firms, or business organizations. All of them spend much time communicating with colleagues about the problems they are solving as they continue to learn more mathematics and share mathematical ideas with others.

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