

# BS in Mathematics (694420) MAP Sheet

Physical and Mathematical Sciences, Mathematics

For students entering the degree program during the 2023-2024 curricular year.



University Core and Graduation Requirements				Suggested Sequence of Courses			
<b>University Core Requirements:</b>				<b>FRESHMAN YEAR</b>			
<b>Requirements</b>	<b>#Classes</b>	<b>Hours</b>	<b>Classes</b>	<b>1st Semester</b>		<b>JUNIOR YEAR</b>	
<b>Religion Cornerstones</b>				<b>5th Semester</b>			
Teachings and Doctrine of The Book of Mormon	1	2.0	REL A 275	First-year Writing	3.0	MATH 342	3.0
Jesus Christ and the Everlasting Gospel	1	2.0	REL A 250	MATH 112	4.0	MATH 413	3.0
Foundations of the Restoration	1	2.0	REL C 225	MATH 191	0.5	Advanced Written & Oral Communication	3.0
The Eternal Family	1	2.0	REL C 200	MATH 290	3.0	Civilization 1	3.0
<b>The Individual and Society</b>				Biological Science	3.0	Religion elective	2.0
American Heritage	1-2	3-6.0	from approved list	Religion Cornerstone course	2.0	General electives	1.0
Global and Cultural Awareness	1	3.0	from approved list	<b>Total Hours</b>	<b>15.5</b>	<b>Total Hours</b>	<b>15.0</b>
<b>Skills</b>				<b>2nd Semester</b>		<b>6th Semester</b>	
First Year Writing	1	3.0	from approved list	American Heritage	3.0	MATH 352	3.0
Advanced Written and Oral Communications	1	3.0	from approved list	Social Science	3.0	Physical Science	3.0
Quantitative Reasoning	1	4.0	MATH 112* or 113*	MATH 113	4.0	Civilization 2	3.0
Languages of Learning (Math or Language)	1	4.0	MATH 112* or 113*	MATH 213	2.0	Religion elective	2.0
<b>Arts, Letters, and Sciences</b>				MATH 215	1.0	General Electives	4.0
Civilization 1	1	3.0	from approved list	Religion Cornerstone course	2.0	<b>Total Hours</b>	<b>15.0</b>
Civilization 2	1	3.0	from approved list	<b>Total Hours</b>	<b>15.0</b>	<b>SENIOR YEAR</b>	
Arts	1	3.0	from approved list	<b>SOPHOMORE YEAR</b>		<b>7th Semester</b>	
Letters	1	3.0	from approved list	<b>3rd Semester</b>		MATH elective 1	3.0
Biological Science	1	3-4.0	from approved list	MATH 314	3.0	MATH elective 2	3.0
Physical Science	1	3.0	from approved list	MATH 371	3.0	Global & Cultural Awareness	3.0
Social Science	1	3.0	from approved list	CS 111	3.0	Religion elective	2.0
<b>Core Enrichment: Electives</b>				Religion Cornerstone course	2.0	General Electives	4.0
Religion Electives	3-4	6.0	from approved list	General Education courses, university requirements, and/or general electives	4.0	<b>Total Hours</b>	<b>15.0</b>
Open Electives	Variable	Variable	personal choice	<b>Total Hours</b>	<b>15.0</b>	<b>8th Semester</b>	
*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (4 hours overlap)				<b>4th Semester</b>		MATH elective 3	3.0
<b>Graduation Requirements:</b>				MATH 334	3.0	MATH elective 4	3.0
Minimum residence hours required		30.0		MATH 341	3.0	Arts	3.0
Minimum hours needed to graduate		120.0		Letters	3.0	General Electives	6.0
				STAT 201 or 251	3.0	<b>Total Hours</b>	<b>15.0</b>
				Religion Cornerstone course	2.0		
				General Electives	0.5		
				<b>Total Hours</b>	<b>14.5</b>		
				<b>Note:</b> 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.			

## Program Requirements

*Grades of C- or below will not be acceptable in major courses.*

### Requirement 1 — Complete 11 Courses

*Core requirements:*

MATH 112 - Calculus 1 4.0

MATH 113 - Calculus 2 4.0

MATH 191 - Seminar in Mathematics 1 0.5

MATH 290 - Fundamentals of Mathematics 3.0

MATH 314 - Calculus of Several Variables 3.0

MATH 334 - Ordinary Differential Equation 3.0

MATH 341 - Theory of Analysis 1 3.0

MATH 342 - Theory of Analysis 2 3.0

MATH 352 - Intro to Complex Analysis 3.0

MATH 371 - Abstract Algebra 1 3.0

MATH 413 - Advanced Linear Algebra 3.0

### Requirement 2 — Complete 1 Requirement

#### Requirement 2.1 — Complete 2 Courses

MATH 213 - Elementary Linear Algebra 2.0

MATH 215 - Computational Linear Algebra 1.0

### Requirement 3 — Complete 1 Course

CS 111 - Intro to Computer Science 3.0

### Requirement 4 — Complete 1 of 2 Courses

STAT 201 - Stat for Engineers & Scientist 3.0

STAT 251 - Intro to Bayesian Statistics 3.0

### Requirement 5 — Complete 12 hours

CS 235 - Data Structures 3.0

MATH 300 - History & Philosophy of Math 3.0

MATH 350 - Combinatorics & Graph Theory 3.0

MATH 362 - Survey of Geometry 3.0

MATH 372 - Abstract Algebra 2 3.0

MATH 380 - Mathematics of Data Science 3.0

MATH 402 - Model Uncertainty & Data 1 3.0

MATH 403 - Model Uncertainty & Data 1 Lab 1.0

MATH 404 - Model Uncertainty & Data 2 3.0

MATH 405 - Model Uncertainty & Data 2 Lab 1.0

MATH 406R - Topics in Mathematics - *You may take once* 3.0

MATH 410 - Intro to Numerical Methods 3.0

MATH 411 - Numerical Methods 3.0

MATH 425 - Mathematical Biology 3.0

MATH 431 - Probability Theory 3.0

MATH 435 - Mathematical Finance 3.0

MATH 436 - Model Dynamics & Control 1 3.0

MATH 437 - Model Dynamics & Control 1 Lab 1.0

MATH 438 - Model Dynamics & Control 2 3.0

MATH 439 - Model Dynamics & Control 2 Lab 1.0

MATH 447 - Intro Partial Differential Eqs 3.0

MATH 451 - Introduction to Topology 3.0

MATH 465 - Differential Geometry 3.0

MATH 473 - Group Representation Theory 3.0

MATH 485 - Mathematical Cryptography 3.0

MATH 487 - Number Theory 3.0

MATH 495R - Readings in Math - *You may take once* 0.5v

MATH 510 - Num Methods for Linear Algebra 3.0

MATH 511 - Num Methods for Partial Diff 3.0

MATH 513R - Adv Topics in Applied Math - *You may take once* 3.0

MATH 521 - Classical Applied Mathematics 3.0

MATH 522 - Mathematics of Deep Learning 3.0

MATH 525 - Network Theory 3.0

MATH 532 - Complex Analysis 3.0

MATH 534 - Intro to Dynamical Systems 1 3.0

MATH 536 - Applied Discrete Probability 3.0

MATH 540 - Linear Analysis 3.0

MATH 541 - Real Analysis 3.0

MATH 547 - Modeling and Analysis of PDEs 3.0

MATH 553 - Foundations of Topology 1 3.0

MATH 554 - Foundations of Topology 2 3.0

MATH 561 - Intro to Algebraic Geometry 1 3.0

MATH 562 - Intro to Algebraic Geometry 2 3.0

MATH 565 - Differential Geometry 3.0

MATH 570 - Matrix Analysis 3.0

MATH 571 - Algebra 1 3.0

MATH 572 - Algebra 2 3.0

MATH 586 - Intro Algebraic Number Theory 3.0

MATH 587 - Intro to Analytic Number Thry 3.0

### Requirement 6 — Obtain confirmation from your advisement center that you have completed the following:

Students are required to take either the GRE Mathematics Subject Test or the Mathematics Major Field Test the last semester before they graduate.

The tests are ETS (Educational Testing Service) standardized assessment

tests of undergraduate mathematics. Go to ETS Math Subject Test

(<http://www.ets.org/gre/subject/about/content/mathematics>) or ETS Major

Field Tests (<http://www.ets.org/mft/about/content/mathematics>) for a test

description and sample problems. These tests do not appear on the

transcript or affect the GPA.

*Students must participate in an exit interview before graduation.*

Recommended Courses are not required to complete the program

ECON 110 - Econ Principles & Problems 3.0

PHSCS 121 - Intro to Newtonian Mechanics 3.0

PHSCS 220 - Intro Electricity & Magnetism 3.0

*Note 1: The courses recommended above can be used to fill General*

*Education requirements.*

*Note 2: Students who continue toward graduate work should complete*

*Math 372 or Math 473, as well as Math 541 and Math 553.*

*Note 3: Students who do not plan to pursue a Ph.D. in mathematics are*

*strongly encouraged to complete CS 235.*

## 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.

## 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.

## INTERNSHIP COORDINATOR:

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283 TMCB

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## MAP DISCLAIMER

While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

## DEPARTMENT INFORMATION

### FACULTY ADVISOR:

Pace Nielsen

318 TMCB

Brigham Young University, Provo, UT 84602

Telephone: (801) 422-7884

## ADVISEMENT CENTER INFORMATION

### Physical and Mathematical Sciences College Advisement Center

Brigham Young University

N-181 ESC

Provo, UT 84602

Telephone: (801) 422-2674