BS in Mathematics (694420) MAP Sheet
Physical and Mathematical Sciences, Mathematics
For students entering the degree program during the 2022-2023 curricular year.

University Core and Graduation Requirements
University Core Requirements:
Requirements#ClassesHoursClasses
Religion Cornerstones
Teachings and Doctrine of The Book of Mormon1.0REL A 275
Jesus Christ and the Everlasting Gospel1.0REL A 250
Foundations of the Restoration1.0REL C 225
The Eternal Family1.0REL C 200
The Individual and Society
American Heritage1-2.0from approved list
Global and Cultural Awareness1.0from approved list
Skills
First Year Writing1.0from approved list
Advanced Written and Oral Communications1.0from approved list
Quantitative Reasoning1.0MATH 112* or 113*
Languages of Learning (Math or Language)1.0MATH 112* or 113*
Arts, Letters, and Sciences
Civilization 11.0from approved list
Civilization 21.0from approved list
Arts1.0from approved list
Letters1.0from approved list
Biological Science1-4.0from approved list
Physical Science1.0from approved list
Social Science1.0from approved list
Core Enrichment: Electives
Religion Electives3-4.0from approved list
Open ElectivesVariableVariable
*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (4 hours overlap)
Graduation Requirements:
Minimum residence hours required30.0
Minimum hours needed to graduate120.0
Suggested Sequence of Courses
Freshman Year
1st Semester
First-year Writing3.0
MATH 1124.0
MATH 1910.5
MATH 2903.0
Biological Science 3.0
Religion Cornerstone course2.0
Total Hours15.5
2nd Semester
American Heritage3.0
Social Science3.0
MATH 1134.0
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 213</td>
<td>3.0</td>
</tr>
<tr>
<td>MATH 215</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>15.0</td>
</tr>
<tr>
<td>Sophomore Year</td>
<td></td>
</tr>
<tr>
<td>3rd Semester</td>
<td></td>
</tr>
<tr>
<td>MATH 314</td>
<td>3.0</td>
</tr>
<tr>
<td>MATH 371</td>
<td>3.0</td>
</tr>
<tr>
<td>CS 1113</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
</tr>
<tr>
<td>General Education courses, university requirements, and/or general electives</td>
<td>4.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>15.0</td>
</tr>
<tr>
<td>4th Semester</td>
<td></td>
</tr>
<tr>
<td>MATH 3343</td>
<td>3.0</td>
</tr>
<tr>
<td>MATH 3413</td>
<td>3.0</td>
</tr>
<tr>
<td>Letters</td>
<td>3.0</td>
</tr>
<tr>
<td>STAT 201 or 2513</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
</tr>
<tr>
<td>General Electives</td>
<td>0.5</td>
</tr>
<tr>
<td>Total Hours</td>
<td>14.5</td>
</tr>
<tr>
<td>Junior Year</td>
<td></td>
</tr>
<tr>
<td>5th Semester</td>
<td></td>
</tr>
<tr>
<td>MATH 3423</td>
<td>3.0</td>
</tr>
<tr>
<td>MATH 4133</td>
<td>3.0</td>
</tr>
<tr>
<td>Advanced Written &amp; Oral Communication</td>
<td>3.0</td>
</tr>
<tr>
<td>Civilization</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion elective</td>
<td>2.0</td>
</tr>
<tr>
<td>General electives</td>
<td>1.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>15.0</td>
</tr>
<tr>
<td>6th Semester</td>
<td></td>
</tr>
<tr>
<td>MATH 3523</td>
<td>3.0</td>
</tr>
<tr>
<td>Physical Science</td>
<td>3.0</td>
</tr>
<tr>
<td>Civilization</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion elective</td>
<td>2.0</td>
</tr>
<tr>
<td>General Electives</td>
<td>4.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>15.0</td>
</tr>
<tr>
<td>Senior Year</td>
<td></td>
</tr>
<tr>
<td>7th Semester</td>
<td></td>
</tr>
<tr>
<td>MATH elective 1</td>
<td>3.0</td>
</tr>
<tr>
<td>MATH elective 2</td>
<td>3.0</td>
</tr>
<tr>
<td>Global &amp; Cultural Awareness</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion elective</td>
<td>2.0</td>
</tr>
<tr>
<td>General Electives</td>
<td>4.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>15.0</td>
</tr>
<tr>
<td>8th Semester</td>
<td></td>
</tr>
<tr>
<td>MATH elective 3</td>
<td>3.0</td>
</tr>
<tr>
<td>MATH elective 4</td>
<td>3.0</td>
</tr>
<tr>
<td>Arts</td>
<td>3.0</td>
</tr>
<tr>
<td>General Electives</td>
<td>6.0</td>
</tr>
</tbody>
</table>
Total Hours 15.0

**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.

BS in Mathematics (694420) 2022-2023 Program Requirements (53.5 Credit Hours)

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 Equations 3.0
- MATH 341 - Theory of Analysis 1 3.0
- MATH 342 - Theory of Analysis 2 3.0
- MATH 352 - Introduction to Complex Analysis 3.0
- MATH 371 - Abstract Algebra 1 3.0
- MATH 413 - Advanced Linear Algebra 3.0

**requirement 2** Complete 1 option

- **option 2.1** Complete 1 course
  - MATH 313 - (Not currently offered)
- **option 2.2** Complete 2 courses
  - MATH 213 - Elementary Linear Algebra 2.0
  - MATH 215 - Computational Linear Algebra 1.0

**requirement 3** Complete 1 course
- C S 111 - Introduction to Computer Science 3.0

**requirement 4** Complete 1 course
- STAT 201 - Statistics for Engineers and Scientists 3.0
- STAT 251 - Introduction to Bayesian Statistics 3.0

**requirement 5** Complete 12.0 hours from the following course(s)
- C S 235 - Data Structures and Algorithms 3.0
- MATH 300 - (Math-MthEd) History and Philosophy of Mathematics 3.0
- MATH 355 - Graph Theory 3.0
- MATH 362 - (Math-MthEd) Survey of Geometry 3.0
- MATH 372 - Abstract Algebra 2 3.0
- MATH 380 - Mathematical Foundations of Data Science 3.0
- MATH 402 - Modeling with Uncertainty and Data 1 3.0
- MATH 403 - Modeling with Uncertainty and Data 1 Laboratory 1.0
- MATH 404 - Modeling with Uncertainty and Data 2 3.0
- MATH 405 - Modeling with Uncertainty and Data 2 Laboratory 1.0
- MATH 406R - Topics in Mathematics 3.0
- MATH 410 - Introduction 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 - Modeling with Dynamics and Control 1 3.0
- MATH 437 - Modeling with Dynamics and Control 1 Laboratory 1.0
- MATH 438 - Modeling with Dynamics and Control 2 3.0
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 Complete 3 courses

ECON 110 - Economic Principles and Problems 3.0
PHSCS 121 - Introduction to Newtonian Mechanics 3.0
PHSCS 220 - Introduction to Electricity and 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.

BS in Mathematics (694420) 2022-2023

INTERNSHIP COORDINATOR:
Rynell Lewis
283 TMCB
801-422-5925
rlewis@mathematics.byu.edu

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