BS in Mathematics (694420) MAP Sheet
Physical and Mathematical Sciences, Mathematics
For students entering the degree program during the 2023-2024 curricular year.

<table>
<thead>
<tr>
<th>University Core and Graduation Requirements</th>
<th>Suggested Sequence of Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>University Core Requirements:</strong></td>
<td></td>
</tr>
<tr>
<td>Requirements</td>
<td>#Classes</td>
</tr>
<tr>
<td>Religion Cornerstones</td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
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<tr>
<td>The Eternal Family</td>
<td>1</td>
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<tr>
<td><strong>The Individual and Society</strong></td>
<td></td>
</tr>
<tr>
<td>American Heritage</td>
<td>1-2</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
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</tr>
<tr>
<td>First Year Writing</td>
<td>1</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
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<tr>
<td>Arts</td>
<td>1</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
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<tr>
<td>Biological Science</td>
<td>1</td>
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<tr>
<td>Physical Science</td>
<td>1</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
</tr>
<tr>
<td><strong>Core Enrichment: Electives</strong></td>
<td></td>
</tr>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Graduation Requirements:</strong></td>
<td></td>
</tr>
<tr>
<td>Minimum residence hours required</td>
<td></td>
</tr>
<tr>
<td>Minimum hours needed to graduate</td>
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</tr>
</tbody>
</table>

**FRESHMAN YEAR**

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>2nd Semester</th>
<th>3rd Semester</th>
<th>4th Semester</th>
<th>5th Semester</th>
<th>6th Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-year Writing</td>
<td>MATH 342</td>
<td>MATH 112</td>
<td>MATH 371</td>
<td>MATH 20</td>
<td>MATH 413</td>
</tr>
<tr>
<td>MATH 191</td>
<td>MATH 290</td>
<td>MATH 113</td>
<td>MATH 213</td>
<td>MATH 215</td>
<td>Advanced Written &amp; Oral Communication</td>
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<tr>
<td>Biological Science</td>
<td>3.0</td>
<td>Religion elective</td>
<td>Religion elective</td>
<td>General Electives</td>
<td>1.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
<td>Total Hours</td>
<td>Total Hours</td>
<td>Total Hours</td>
<td>15.5</td>
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</table>

**JUNIOR YEAR**

<table>
<thead>
<tr>
<th>7th Semester</th>
<th>8th Semester</th>
<th>9th Semester</th>
<th>10th Semester</th>
<th>11th Semester</th>
<th>12th Semester</th>
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</thead>
<tbody>
<tr>
<td>MATH elective 1</td>
<td>MATH elective 2</td>
<td>MATH elective 3</td>
<td>MATH elective 4</td>
<td>MATH elective 5</td>
<td>MATH elective 6</td>
</tr>
<tr>
<td>MATH 314</td>
<td>MATH 371</td>
<td>MATH 20</td>
<td>MATH 213</td>
<td>MATH 215</td>
<td>General Electives</td>
</tr>
<tr>
<td>MATH 334</td>
<td>MATH 341</td>
<td>Letters</td>
<td>Letters</td>
<td>STAT 201 or 251</td>
<td>Total Hours</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
<td>Total Hours</td>
<td>Total Hours</td>
<td>Total Hours</td>
<td>15.0</td>
</tr>
<tr>
<td>General Electives</td>
<td>0.5</td>
<td>4.0</td>
<td>3.0</td>
<td>3.0</td>
<td>6.0</td>
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</table>

**SENIOR YEAR**

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>2nd Semester</th>
<th>3rd Semester</th>
<th>4th Semester</th>
<th>5th Semester</th>
<th>6th Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH elective 2</td>
<td>MATH elective 1</td>
<td>MATH elective 3</td>
<td>MATH elective 5</td>
<td>MATH elective 6</td>
<td>MATH elective 7</td>
</tr>
<tr>
<td>MATH 314</td>
<td>MATH 371</td>
<td>MATH 20</td>
<td>MATH 213</td>
<td>MATH 215</td>
<td>General Electives</td>
</tr>
<tr>
<td>MATH 334</td>
<td>MATH 341</td>
<td>Letters</td>
<td>Letters</td>
<td>STAT 201 or 251</td>
<td>Total Hours</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
<td>Total Hours</td>
<td>Total Hours</td>
<td>Total Hours</td>
<td>14.5</td>
</tr>
</tbody>
</table>

**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.
## 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
- 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
- MATH 342 - Theory of Analysis 2.3
- 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

**Complete 1 Course**
- MATH 213 - Elementary Linear Algebra 2.0
- MATH 215 - Computational Linear Algebra 1.0

### Requirement 3 — Complete 1 Course

- C S 235

### 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

- C S 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 Eq 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
- MATH 554 - Foundations of Topology 2.3
- MATH 556 - 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 either take 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.

**Required Courses**
- ECON 110 - Econ Principles & Problems 3.0
- ECON 111
- ECON Principles & Problems 3.0
- ECON 220
- Intro to Newtonian Mechanics 3.0
- ECON 250
- Intro Microeconomic Theory 3.0
- ECON 310
- Intro Macroeconomic Theory 3.0
- ECON 320
- Intro Monetary Theory 3.0
- ECON 330
- Intro Mathematical Economics 3.0
- ECON 340
- Intro Econometrics 3.0
- ECON 350
- Intro International Economics 3.0
- ECON 360
- Intro Microeconomic Theory 3.0
- ECON 370
- Intro Macroeconomic Theory 3.0
- ECON 380
- Intro Mathematical Economics 3.0
- ECON 390
- Intro International Economics 3.0
- ECON 410
- Intro Monetary Theory 3.0
- ECON 420
- Intro Economic Theory 3.0
- ECON 430
- Intro International Economics 3.0
- ECON 440
- Intro Mathematical Economics 3.0
- ECON 450
- Intro International Economics 3.0
- ECON 460
- Intro Mathematical Economics 3.0
- ECON 470
- Intro International Economics 3.0
- ECON 480
- Intro Mathematical Economics 3.0
- ECON 490
- Intro International Economics 3.0
- ECON 510
- Intro Monetary Theory 3.0
- ECON 520
- Intro Economic Theory 3.0
- ECON 530
- Intro International Economics 3.0
- ECON 540
- Intro Mathematical Economics 3.0
- ECON 550
- Intro International Economics 3.0
- ECON 560
- Intro Mathematical Economics 3.0
- ECON 570
- Intro International Economics 3.0
- ECON 580
- Intro Mathematical Economics 3.0
- ECON 590
- Intro International Economics 3.0
- ECON 610
- Intro Monetary Theory 3.0
- ECON 620
- Intro Economic Theory 3.0
- ECON 630
- Intro International Economics 3.0
- ECON 640
- Intro Mathematical Economics 3.0
- ECON 650
- Intro International Economics 3.0
- ECON 660
- Intro Mathematical Economics 3.0
- ECON 670
- Intro International Economics 3.0
- ECON 680
- Intro Mathematical Economics 3.0
- ECON 690
- Intro International Economics 3.0
- ECON 710
- Intro Monetary Theory 3.0
- ECON 720
- Intro Economic Theory 3.0
- ECON 730
- Intro International Economics 3.0
- ECON 740
- Intro Mathematical Economics 3.0
- ECON 750
- Intro International Economics 3.0
- ECON 760
- Intro Mathematical Economics 3.0
- ECON 770
- Intro International Economics 3.0
- ECON 780
- Intro Mathematical Economics 3.0
- ECON 790
- Intro International Economics 3.0
- ECON 810
- Intro Monetary Theory 3.0
- ECON 820
- Intro Economic Theory 3.0
- ECON 830
- Intro International Economics 3.0
- ECON 840
- Intro Mathematical Economics 3.0
- ECON 850
- Intro International Economics 3.0
- ECON 860
- Intro Mathematical Economics 3.0
- ECON 870
- Intro International Economics 3.0
- ECON 880
- Intro Mathematical Economics 3.0
- ECON 890
- Intro International Economics 3.0

### 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:

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