### University Core and Graduation Requirements

#### University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Religion Cornerstones</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
<td>2.0</td>
<td>REL A 275</td>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
<td>2.0</td>
<td>REL A 250</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
<td>2.0</td>
<td>REL C 225</td>
</tr>
<tr>
<td>The Eternal Family</td>
<td>1</td>
<td>2.0</td>
<td>REL C 200</td>
</tr>
<tr>
<td><strong>The Individual and Society</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Heritage</td>
<td>1-2</td>
<td>3-6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Writing</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
<td>4.0</td>
<td>MATH 112* or 113*</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
<td>4.0</td>
<td>MATH 112* or 113*</td>
</tr>
<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Biological Science</td>
<td>1</td>
<td>3-4.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Physical Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td><strong>Core Enrichment: Electives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
<td>6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
</tr>
</tbody>
</table>

*These classes fill both University Core and Program Requirements (4 hours overlap)

#### Graduation Requirements:

- Minimum residence hours required: 30.0
- Minimum hours needed to graduate: 120.0

### Suggested Sequence of Courses

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>2nd Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-year Writing</td>
<td>American Heritage</td>
</tr>
<tr>
<td>MATH 112</td>
<td>MATH 134</td>
</tr>
<tr>
<td>MATH 191</td>
<td>STAT 201 or 251</td>
</tr>
<tr>
<td>MATH 290</td>
<td>Social Science</td>
</tr>
<tr>
<td>Biological Science</td>
<td>Religion Cornerstone course</td>
</tr>
<tr>
<td>Total Hours</td>
<td>Total Hours</td>
</tr>
<tr>
<td>15.0</td>
<td>15.0</td>
</tr>
</tbody>
</table>

#### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>3rd Semester</th>
<th>4th Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 341</td>
<td>MATH elective 3</td>
</tr>
<tr>
<td>MATH 371</td>
<td>MATH elective 4</td>
</tr>
<tr>
<td>Letters</td>
<td>Arts</td>
</tr>
<tr>
<td>Physical Science</td>
<td>Religion Cornerstone course</td>
</tr>
<tr>
<td>Total Hours</td>
<td>Total Hours</td>
</tr>
<tr>
<td>15.0</td>
<td>15.0</td>
</tr>
</tbody>
</table>

#### JUNIOR YEAR

<table>
<thead>
<tr>
<th>5th Semester</th>
<th>6th Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 342</td>
<td>MATH 352</td>
</tr>
<tr>
<td>MATH 413</td>
<td>MATH 334</td>
</tr>
<tr>
<td>Advanced Written &amp; Oral Communication</td>
<td>Civilization 2</td>
</tr>
<tr>
<td>Religion elective</td>
<td>Religion elective</td>
</tr>
<tr>
<td>Total Hours</td>
<td>Total Hours</td>
</tr>
<tr>
<td>15.0</td>
<td>15.0</td>
</tr>
</tbody>
</table>

#### SENIOR YEAR

<table>
<thead>
<tr>
<th>7th Semester</th>
<th>8th Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH elective 1</td>
<td>MATH elective 3</td>
</tr>
<tr>
<td>MATH elective 2</td>
<td>MATH elective 4</td>
</tr>
<tr>
<td>Global &amp; Cultural Awareness</td>
<td>Arts</td>
</tr>
<tr>
<td>Religion elective</td>
<td>General Electives</td>
</tr>
<tr>
<td>Total Hours</td>
<td>Total Hours</td>
</tr>
<tr>
<td>15.0</td>
<td>15.0</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.
**Grades of C- or below will not be acceptable in major courses.**

**REQUIREMENT 1** Complete 11 courses

**CORE REQUIREMENTS:**
- MATH 112 - Calculus 1
- MATH 113 - Calculus 2
- MATH 191 - Seminar in Mathematics 1
- MATH 290 - Fundamentals of Mathematics
- MATH 314 - Calculus of Several Variables
- MATH 334 - Ordinary Differential Equations
- MATH 341 - Theory of Analysis 1
- MATH 342 - Theory of Analysis 2
- MATH 352 - Introduction to Complex Analysis
- MATH 371 - Abstract Algebra 1
- MATH 413 - Advanced Linear Algebra

**REQUIREMENT 2** Complete 2 options

**OPTION 2.1** Complete 1 course
- MATH 313 - (Not currently offered)

**OPTION 2.2** Complete 2 courses
- MATH 213 - Elementary Linear Algebra
- MATH 215 - Computational Linear Algebra

**REQUIREMENT 3** Complete 1 course
- C S 235

**REQUIREMENT 4** Complete 1 course
- STAT 251 - Introduction to Bayesian Statistics

**REQUIREMENT 5** Complete 12.0 hours from the following course(s)
- C S 235 - Data Structures and Algorithms
- MATH 300 - (Math-MthEd) History and Philosophy of Mathematics
- MATH 355 - Graph Theory
- MATH 362 - (Math-MthEd) Survey of Geometry
- MATH 372 - Abstract Algebra 2
- MATH 402 - Modelling with Uncertainty and Data 1 Laboratory
- MATH 404 - Modelling with Uncertainty and Data 2
- MATH 405 - Modelling with Uncertainty and Data 2 Laboratory
- MATH 406R - Topics in Mathematics
- MATH 410 - Introduction to Numerical Methods
- MATH 411 - Numerical Methods
- MATH 425 - Mathematical Biology
- MATH 431 - Probability Theory
- MATH 435 - Mathematical Finance
- MATH 436 - Modelling with Dynamics and Control 1
- MATH 437 - Modelling with Dynamics and Control 1 Laboratory
- MATH 438 - Modelling with Dynamics and Control 2
- MATH 439 - Modelling with Dynamics and Control 2 Laboratory
- MATH 447 - Introduction to Partial Differential Equations
- MATH 450 - Combinatorics
- MATH 451 - Introduction to Topology
- MATH 465 - Differential Geometry
- MATH 473 - Group Representation Theory
- MATH 485 - Mathematical Cryptography
- MATH 487 - Number Theory
- MATH 495R - Readings in Mathematics
- MATH 510 - Numerical Methods for Linear Algebra
- MATH 511 - Numerical Methods for Partial Differential Equations
- MATH 513R - Advanced Topics in Applied Mathematics
- MATH 521 - Methods of Applied Mathematics 1
- MATH 522 - Methods of Applied Mathematics 2
- MATH 525 - Network Theory
- MATH 532 - Complex Analysis
- MATH 534 - Introduction to Dynamical Systems 1
- MATH 536 - Applied Discrete Probability
- MATH 540 - Linear Analysis
- MATH 541 - Real Analysis
- MATH 547 - Modeling and Analysis of Partial Differential Equations
- MATH 553 - Foundations of Topology 1
- MATH 554 - Foundations of Topology 2
- MATH 561 - Introduction to Algebraic Geometry 1
- MATH 562 - Introduction to Algebraic Geometry 2
- MATH 565 - Differential Geometry
- MATH 570 - Matrix Analysis
- MATH 571 - Algebra 1
- MATH 572 - Algebra 2
- MATH 586 - Introduction to Algebraic Number Theory
- MATH 587 - Introduction to Analytic Number Theory
- MATH 595R - Readings in Mathematics
- MATH 596 - Numerical Methods for Partial Differential Equations
- MATH 597 - Advanced Topics in Applied Mathematics
- MATH 598 - Advanced Topics in Applied Mathematics
- MATH 599R - Readings in Mathematics
- MATH 613 - Advanced Linear Algebra
- MATH 634 - Applied Discrete Probability
- MATH 640 - Linear Algebra
- MATH 641 - Real Analysis
- MATH 647 - Modeling and Analysis of Partial Differential Equations
- MATH 653 - Foundations of Topology 1
- MATH 654 - Foundations of Topology 2
- MATH 661 - Introduction to Algebraic Geometry 1
- MATH 662 - Introduction to Algebraic Geometry 2
- MATH 665 - Differential Geometry
- MATH 670 - Matrix Analysis
- MATH 671 - Algebra 1
- MATH 672 - Algebra 2
- MATH 686 - Introduction to Algebraic Number Theory
- MATH 687 - Introduction to Analytic Number Theory
- MATH 695R - Readings in Mathematics
- MATH 696 - Numerical Methods for Partial Differential Equations
- MATH 697 - Advanced Topics in Applied Mathematics
- MATH 698 - Advanced Topics in Applied Mathematics
- MATH 699R - Readings in Mathematics
- MATH 713 - Advanced Linear Algebra
- MATH 734 - Applied Discrete Probability
- MATH 740 - Linear Algebra
- MATH 741 - Real Analysis
- MATH 747 - Modeling and Analysis of Partial Differential Equations
- MATH 753 - Foundations of Topology 1
- MATH 754 - Foundations of Topology 2
- MATH 761 - Introduction to Algebraic Geometry 1
- MATH 762 - Introduction to Algebraic Geometry 2
- MATH 765 - Differential Geometry
- MATH 770 - Matrix Analysis
- MATH 771 - Algebra 1
- MATH 772 - Algebra 2
- MATH 786 - Introduction to Algebraic Number Theory
- MATH 787 - Introduction to Analytic Number Theory
- MATH 795R - Readings in Mathematics
- MATH 796 - Numerical Methods for Partial Differential Equations
- MATH 797 - Advanced Topics in Applied Mathematics
- MATH 798 - Advanced Topics in Applied Mathematics
- MATH 799R - Readings in Mathematics

**RECOMMENDED** Complete 3 courses
- ECON 110 - Economic Principles and Problems
- PHSCS 121 - Introduction to Newtonian Mechanics
- PHSCS 220 - Introduction to Electricity and Magnetism

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 552.

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)
2020-2021

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