MATHEMATICS (BA)

This program was approved for students entering the university in the Summer 2019–Spring 2020 catalog year. For more information about catalog year, go to Catalog Year Information (http://catalog.louisville.edu/undergraduate/university-wide-unit-specific-policies/catalog-year).

Bachelor of Arts in Mathematics
Unit: College of Arts and Sciences (AS) (http://www.louisville.edu/a-s)
Department: Mathematics (http://www.math.louisville.edu)
Academic Plan Code(s): MATHBA

The Bachelor of Arts in Mathematics is designed for students wishing to obtain a broad yet substantial background in mathematics as well as general education. The Bachelor of Arts covers a wide variety of topics such as algebra, geometry, and probability. This breadth is particularly well-suited for students preparing for secondary certification in mathematics.

Completion of this degree requires work to be submitted for the department’s Learning Outcomes Measurement. For details, contact the department.

Degree Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Education Requirements</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>(<a href="http://catalog.louisville.edu/undergraduate/general-education-requirements">http://catalog.louisville.edu/undergraduate/general-education-requirements</a>)</td>
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<td>College/School Requirements</td>
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<td>Program/Major Requirements</td>
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<td>Minimum Total Hours</td>
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</table>

1 Some credit hours from the General Education Requirements may be satisfied by courses defined by the program, in which case additional electives will be required to complete the minimum hours for the degree.

Specific coursework information can be found on the Degree Requirements tab.

Accelerated BA-BS/MA Option in Mathematics

Students must apply for admission to the program no later than the end of the junior year and must have completed MATH 205, MATH 206, MATH 301, and MATH 325, or equivalent courses, prior to application.

Applicants must have a minimum overall GPA of 3.5, and minimum GPA of 3.66 in mathematics courses. As part of the combined degree, students must complete MATH 405 and at least four (4) of the following: MATH 501, MATH 502, MATH 521, MATH 522, MATH 561, MATH 562, or MATH 581, including at least one sequence from among these courses.

The student may take a maximum of nine (9) credit hours for graduate credit, which will also apply to the requirements for the baccalaureate degree in Mathematics. All 600-level courses numbered 689 or below qualify, as do 500-level courses when completed in accord with the stipulations for graduate credit outlined in the syllabus.

Early Start Program (Jointly with the College of Education and Human Development)

The Master of Arts in Teaching program in conjunction with the undergraduate programs in Chemistry, Biology, and Mathematics offers a comprehensive and professionally-focused program leading to an additional degree of MAT Middle or Secondary Education. This early start program enables superior students to receive two degrees within five years. A total of 148 credits are required for the dual degrees: 121 credits of coursework devoted toward the baccalaureate degree and 36 credits toward the MAT, with nine hours double-counted. This program will be available for students who are entering their junior year. They may take graduate level courses in the College of Education and Human Development (CEHD) in their 4th year of study.

The current qualifications for the joint degree program have been agreed upon by discipline faculty from the Colleges of Arts and Sciences and Education and Human Development. The criteria vary by discipline. Students enrolling in the accelerated program will be non-thesis students and must adhere to all policies pertaining to Graduate Students. All interested students must submit an application to the College of Education and Human Development (CEHD) MAT program and meet the admission criteria.

Departmental Admission Requirements

Admission to the BA in Mathematics requires the following:

- enrollment in a mathematics course beyond MATH 205;
- a minimum cumulative grade point average of 2.0; and
- a minimum grade point average of 2.0 on all courses in the major.

The Application for Major form can be found on the Arts & Sciences Advising Center website (http://louisville.edu/artsandsciences/advising/apply).

Accelerated BA/BS-MA Option in Mathematics

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Applicants must have a minimum overall GPA of 3.5, and minimum GPA of 3.66 in mathematics courses.
### General Education Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Education Requirements (<a href="http://catalog.louisville.edu/undergraduate/general-education-requirements">http://catalog.louisville.edu/undergraduate/general-education-requirements</a>) *</td>
<td>31</td>
</tr>
</tbody>
</table>

The following courses are required by the program and can satisfy the respective General Education Requirement:

- MATH 205 Calculus I - QR
- One of the following:
  - PHYS 299 Introductory Electricity, Magnetism and Light & PHYS 295 Introductory Laboratories I - SL
  - CHEM 201 General Chemistry I - S & CHEM 207 Introduction to Chemical Analysis I - SL
  - BIOL 240 Unity of Life - S & BIOL 244 Principles of Biology Laboratory - SL

*All degrees require the completion of the University-wide General Education Program (link provided above). Some General Education requirements may be met in the requirements for the major or supporting coursework, in which case additional electives may be required to complete the minimum hours for the degree.

### College/School Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arts &amp; Sciences Requirements</td>
<td></td>
</tr>
<tr>
<td>GEN 100</td>
<td>Student Success Center Orientation</td>
<td>1</td>
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<tr>
<td>or GEN 101</td>
<td>Arts and Sciences Orientation</td>
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<tr>
<td></td>
<td>Foreign Language</td>
<td>12</td>
</tr>
<tr>
<td>Electives in Humanities or Social Sciences</td>
<td>9</td>
<td></td>
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<tr>
<td>WR—two approved courses at the 300 level or above</td>
<td>3</td>
<td></td>
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</tbody>
</table>

Minimum Total Hours: 22

### Program/Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mathematics Department</td>
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</tr>
<tr>
<td>MATH 205</td>
<td>Calculus I - QR</td>
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<tr>
<td>MATH 206</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 301</td>
<td>Calculus III</td>
<td>4</td>
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<tr>
<td>MATH 311</td>
<td>Introduction to Higher Math</td>
<td>3</td>
</tr>
<tr>
<td>MATH 325</td>
<td>Introduction to Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 387</td>
<td>Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 501</td>
<td>Introduction to Analysis I - CUE</td>
<td>3</td>
</tr>
<tr>
<td>MATH 521</td>
<td>Modern Algebra I - CUE</td>
<td>3</td>
</tr>
<tr>
<td>MATH 550</td>
<td>Advanced Euclidean Geometry</td>
<td>3</td>
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<tr>
<td>or MATH 551</td>
<td>Geometry</td>
<td></td>
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<tr>
<td>MATH 560</td>
<td>Statistical Data Analysis - WR</td>
<td>3</td>
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<tr>
<td>or MATH 561</td>
<td>Probability</td>
<td></td>
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</table>

Mathematics electives chosen in consultation with departmental advisor: 3

Supporting Courses

Select one of the following sequences: 7-10

- Sequence One:
  - PHYS 295 Introductory Laboratories I - SL 4
  - PHYS 296 Introductory Laboratories II - SL

### Electives

- Minimum Electives 5: 14
- Minimum Total Hours: 68

Only 40 hours in the major department may be applied toward the Bachelor of Arts degree.

Mathematics courses at the 100 level do not count toward hours in the major.

At least 50 of the total minimum hours required must be at the 300 level or above.

A minimum of 9 hours in courses numbered 311 or higher must be successfully completed in the Department of Mathematics at the University of Louisville.

### Culminating Undergraduate Experience (Graduation requirement)

Requirement fulfilled by completing:

- MATH 501 Introduction to Analysis I - CUE 3
- or MATH 521 Modern Algebra I - CUE

1. Completion of the intermediate level of a single foreign language
2. In addition to courses counted toward General Education; 6 hours must be at 300 level or above
3. May be incorporated into other degree requirements
4. Fulfills General Education requirement.
5. Students who satisfy General Education Requirements by courses defined by the program will require additional electives to complete the minimum hours for the degree.

### Flight Plan

#### Course

<table>
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<tr>
<th>Year 1</th>
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<tbody>
<tr>
<td><strong>Fall</strong></td>
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<tr>
<td>GEN 100</td>
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<td>or GEN 101</td>
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<tr>
<td>ENGL 101</td>
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<td>MATH 205</td>
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General Education: Cardinal Core Oral Communication - OC 3
General Education: Cardinal Core Social & Behavioral Sciences Historical Perspective - SBH 3
<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Year</th>
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<td>General Elective</td>
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<tr>
<td>ENGL 102 Intermediate College Writing - WC</td>
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<td>Spring</td>
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<td>General Education: Cardinal Core Arts &amp; Humanities - AH</td>
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<td>MATH 206 Calculus II</td>
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<td>MATH 311 Introduction to Higher Math</td>
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<td>Foreign Language 1</td>
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<td>Year 2</td>
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<td>General Education: Cardinal Core Arts &amp; Humanities Global Diversity - AHID2</td>
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<tr>
<td>Foreign Language 2</td>
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<tr>
<td>MATH 301 Calculus III</td>
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<td>General Elective (300 level or above)</td>
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<td>General Elective (300 level or above)</td>
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<tr>
<td>Hours</td>
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<tr>
<td>Spring</td>
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<td>MATH 325 Introduction to Linear Algebra</td>
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<td>General Education: Cardinal Core Social &amp; Behavioral Sciences US Diversity - SBD1</td>
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<td>Foreign Language 3</td>
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<tr>
<td>Humanities or Social Science Elective (300 level or above)</td>
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<tr>
<td>General Elective</td>
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<tr>
<td>Hours</td>
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<td>Year 3</td>
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<td>Fall</td>
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<td>MATH 387 Discrete Mathematics</td>
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<tr>
<td>First portion of chosen Natural Science Sequence</td>
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<td>Foreign Language 4 or General Elective</td>
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<tr>
<td>Humanities or Social Science WR Elective (300 level or above)</td>
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<tr>
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<td>Hours</td>
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<td>Spring</td>
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<td>Humanities or Social Science WR Elective (300 level or above)</td>
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<td>Natural Science Elective (not from chosen sequence) (also fulfills General Education/Cardinal Core Natural Science Requirement - S)</td>
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<td>Second portion of chosen Natural Science Sequence (also fulfills General Education/Cardinal Core Natural Science with Lab Requirement - S+SL or B)</td>
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<tr>
<td>MATH 550 Advanced Euclidean Geometry or MATH 551 Geometry</td>
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<tr>
<td>MATH 560 Statistical Data Analysis - WR or Probability</td>
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<td>or MATH 561 or Probability</td>
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<td>Hours</td>
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<td>MATH 501 Introduction to Analysis I - CUE</td>
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<td>Hours</td>
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<tr>
<td>Minimum Total Hours</td>
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</table>

Degree Audit reports illustrate how your completed courses fulfill the requirements of your academic plan. What-if reports allow you to compare the courses you have completed in your current academic plan to the courses required in another academic plan. Should you have questions about either report, please consult with your academic advisor.

To create either report:

1. Log into your ULink account.
2. Click on the Student Services tab.
3. Next, click on "View my Academic Advisement Report" to run a Degree Audit report in the Undergraduate Advising area.
4. To create a What-if report, click on "Create a What-if Advisement Report."

Click here to run a Degree Audit report, or create a What-if report. (https://ulink.louisville.edu)

Flight Planner
Based on your major, the Flight Planner tool may be available for you to create a personalized Flight Plan. The Flight Planner can be found in the ULink Student Center. Consult with your advisor for assistance with the Flight Planner.