MATHEMATICS (BA)

This program was approved for students entering the university in the Summer 2023–Spring 2024 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 ([https://louisville.edu/math/](https://louisville.edu/math/))
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 (<a href="http://catalog.louisville.edu/undergraduate/general-education-requirements/">http://catalog.louisville.edu/undergraduate/general-education-requirements/</a>)</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>College/School Requirements</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Program/Major Requirements</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Supporting Courses</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Minimum Total Hours</td>
<td>121</td>
</tr>
</tbody>
</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

Mathematics majors who are considering pursuing a master’s degree (MA) in Mathematics can speed up the process by applying some of their undergraduate credit hours toward a master’s degree. Students accepted into the Accelerated BA-BS/MA take three graduate courses (9 credit hours) as an undergraduate that apply toward both the bachelor’s degree and the eventual master’s degree.

Interested students must apply to the program during their Junior year (i.e., when they have accumulated 60-90 hours of credit). Applicants 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.

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;
- a minimum grade point average of 2.0 on all courses in the major.

The Change Major Request form can be found under the Academic Progress tile on ULink.

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.

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

One of the following:

- **PHYS 299** Introductory Electricity, Magnetism and Light
- **PHYS 295** Introductory Laboratories I

- **CHEM 201** General Chemistry I
- **CHEM 207** Introduction to Chemical Analysis I

- **BIOL 240** Unity of Life

*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>GEN 100</td>
<td>Student Success Center First Year Experience</td>
<td>1</td>
</tr>
<tr>
<td>or GEN 101</td>
<td>Arts &amp; Sciences First Year Experience</td>
<td></td>
</tr>
<tr>
<td>Foreign Language</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Electives in Humanities or Social Sciences</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>WR—two approved courses at the 300 level or above</td>
<td>3</td>
<td></td>
</tr>
</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><strong>Mathematics Department</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MATH 205</strong></td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td><strong>MATH 206</strong></td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td><strong>MATH 301</strong></td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td><strong>MATH 311</strong></td>
<td>Introduction to Higher Math</td>
<td>3</td>
</tr>
<tr>
<td><strong>MATH 325</strong></td>
<td>Introduction to Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td><strong>MATH 387</strong></td>
<td>Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td><strong>MATH 501</strong></td>
<td>Introduction to Analysis I</td>
<td>3</td>
</tr>
<tr>
<td><strong>MATH 521</strong></td>
<td>Modern Algebra I</td>
<td>3</td>
</tr>
<tr>
<td><strong>MATH 550</strong></td>
<td>Advanced Euclidean Geometry</td>
<td>3</td>
</tr>
<tr>
<td>or <strong>MATH 551</strong></td>
<td>Geometry</td>
<td>3</td>
</tr>
<tr>
<td><strong>MATH 561</strong></td>
<td>Probability</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics electives chosen in consultation with departmental advisor</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Minimum Total Hours**: 36

### Supporting Courses

Select one of the following sequences: 7-10

**Sequence One**:

- **PHYS 295** Introductory Laboratories I
- **PHYS 296** Introductory Laboratories II
- **PHYS 298** Introductory Mechanics, Heat and Sound
- **PHYS 299** Introductory Electricity, Magnetism and Light

**Sequence Two**:

- **CHEM 201** General Chemistry I

### Electives

**Minimum Electives**: 5

**Minimum Total Hours**: 14

### Flight Plan

**Year 1**

#### Fall

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 100</td>
<td>Student Success Center First Year Experience</td>
<td>1</td>
</tr>
<tr>
<td>or GEN 101</td>
<td>Arts &amp; Sciences First Year Experience</td>
<td></td>
</tr>
<tr>
<td><strong>ENGL 101</strong></td>
<td>Introduction to College Writing</td>
<td>3</td>
</tr>
<tr>
<td><strong>MATH 205</strong></td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td><strong>General Education: Cardinal Core Oral Communication - OC</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>General Education: Cardinal Core Social &amp; Behavioral Sciences Historical Perspective - SBH</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>General Elective</strong></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Spring**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENGL 102</strong></td>
<td>Intermediate College Writing</td>
<td>3</td>
</tr>
<tr>
<td><strong>General Education: Cardinal Core Arts &amp; Humanities - AH</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>MATH 206</strong></td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td><strong>MATH 311</strong></td>
<td>Introduction to Higher Math</td>
<td>3</td>
</tr>
</tbody>
</table>

**Minimum Total Hours**: 17

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.

**Completion of the intermediate level of a single foreign language**

**In addition to courses counted toward General Education; 6 hours must be at 300 level or above**

**May be incorporated into other degree requirements**

**Fulfills General Education requirement**

Students who satisfy General Education Requirements by courses defined by the program will require additional electives to complete the minimum hours for the degree.
### Year 2
#### Fall
- **General Education:** Cardinal Core Arts & Humanities Global Diversity - AHD2  
  3
- **Foreign Language**  
  3-4
- **MATH 301** Calculus III  
  4
- **General Elective (300 level or above)**  
  3
- **General Elective (300 level or above)**  
  3

<table>
<thead>
<tr>
<th>Hours</th>
<th>16-17</th>
</tr>
</thead>
</table>

#### Spring
- **MATH 325** Introduction to Linear Algebra  
  3
- **General Education:** Cardinal Core Social & Behavioral Sciences US Diversity - SBD1  
  3
- **Foreign Language**  
  3-4
- **Humanities or Social Science Elective (300 level or above)**  
  3
- **General Elective**  
  3

<table>
<thead>
<tr>
<th>Hours</th>
<th>15-16</th>
</tr>
</thead>
</table>

### Year 3
#### Fall
- **MATH 387** Discrete Mathematics  
  3
- **First portion of chosen Natural Science Sequence**  
  3-5
- **Foreign Language 4 or General Elective**  
  3
- **Humanities or Social Science WR Elective (300 level or above)**  
  3
- **General Elective (300 level or above)**  
  3

<table>
<thead>
<tr>
<th>Hours</th>
<th>15-17</th>
</tr>
</thead>
</table>

#### Spring
- **Humanities or Social Science WR Elective (300 level or above)**  
  3
- **Natural Science Elective (not from chosen sequence) (also fulfills General Education/Cardinal Core Natural Science Requirement - S)**  
  3
- **Second portion of chosen Natural Science Sequence (also fulfills General Education/Cardinal Core Natural Science with Lab Requirement - S+SL or B)**  
  4-5
- **MATH 550 or MATH 551** Advanced Euclidean Geometry or Geometry  
  3
- **MATH 561** Probability  
  3

<table>
<thead>
<tr>
<th>Hours</th>
<th>16-17</th>
</tr>
</thead>
</table>

### Year 4
#### Fall
- **MATH 501** Introduction to Analysis I  
  3
- **MATH 521** Modern Algebra I  
  3
- **Natural Science Elective (non-Math)**  
  3-4
- **General Elective**  
  3
- **General Elective**  
  3

<table>
<thead>
<tr>
<th>Hours</th>
<th>15-16</th>
</tr>
</thead>
</table>

#### Spring
- **Math Elective**  
  3
- **General Elective (300 level or above)**  
  3
- **General Elective**  
  3
- **General Elective**  
  3

| Hours | 12 |

| Minimum Total Hours | 122-129 |

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### Degree Audit Report
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.

### Flight Planner
The Flight Planner tool is available for you to create a personalized Flight Plan to graduation. Advisors have access to review your Flight Planner and can help you adjust it to ensure you remain on track to graduate in a timely manner.

**To create these reports:**

a. Log into your ULink account.

b. Click on the Academic Progress tile.

c. Select the appropriate report.
   i. To run a Degree Audit report, click on "View my Degree Audit."
   ii. To create a What-if report, click on "Create a What-if Advisement Report."
   iii. To run a Flight Planner report, click on "Use My Flight Planner."

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