The mathematics named option programs allow students to develop a deep understanding of how the subject relates to other areas of human inquiry. The requirements for these programs feature mathematics courses with topics inspired by and commonly applied to problems in these associated fields. Though often paired with a second major in a related area, these programs function well alone and are suited to any mathematics student with a variety of interests. Students interested in a named option program are recommended to meet with an advisor to navigate the various plans and courses available to them. Advising information can be found on the BA or BS pages (http://guide.wisc.edu/undergraduate/letters-science/mathematics/mathematics-ba/#advisingandcareerstext).

The named options do not support honors in the major.

## REQUIREMENTS

The Mathematics Major for Secondary Education named option requires at least 8 distinct courses for at least 24 credits as described below. While a single courses may be used to fulfill more than one requirement, it will only contribute once to the total course/credit count. Moreover, only one of the linear algebra courses (MATH 320, MATH 340, MATH 341, and MATH 375) may be applied to the course/credit count for the program.

### Code | Title | Credits
--- | --- | ---
**Requirements (minimum of eight distinct courses for at least 24 credits) ¹** |  |  
**Linear Algebra** |  | 3-5
MATH 320 | Linear Algebra and Differential Equations |  
or MATH 340 | Elementary Matrix and Linear Algebra |  
or MATH 341 | Linear Algebra |  
or MATH 375 | Topics in Multi-Variable Calculus and Linear Algebra |  
**Intermediate Mathematics Requirement (complete at least one)** |  | 0-3
MATH 341 | Linear Algebra |  
or MATH 375 | Topics in Multi-Variable Calculus and Linear Algebra |  
MATH 421 | The Theory of Single Variable Calculus |  
MATH 467 | Introduction to Number Theory |  
**Analysis (complete at least one)** |  | 0-3
MATH 421 | The Theory of Single Variable Calculus |  
MATH 521 | Analysis I |  
**Modern Algebra (complete at least one)** |  | 3
MATH 540 | Linear Algebra II |  
MATH 541 | Modern Algebra |  
**Probability or Combinatorics (complete at least one)** |  | 3
MATH/STAT 431 | Introduction to the Theory of Probability |  
or MATH/STAT 309 | Introduction to Probability and Mathematical Statistics I |  
MATH/COMP SCI STAT 475 | Introduction to Combinatorics |  
MATH 531 | Probability Theory |  
**Statistics** |  | 3
MATH/STAT 310 | Introduction to Probability and Mathematical Statistics II |  
or STAT 301 | Introduction to Statistical Methods |  
or STAT 302 | Accelerated Introduction to Statistical Methods |  
or STAT 312 | Introduction to Theory and Methods of Mathematical Statistics II |  
or STAT 324 | Introductory Applied Statistics for Engineers |  
or ECON 310 | Statistics: Measurement in Economics |  
**History of Mathematics** |  | 3
MATH/HIST SCI 473 | History of Mathematics |  
**Geometry** |  | 3
MATH 461 | College Geometry I |  
**Capstone course** |  | 3
MATH/ CURRIC 471 | Mathematics for Secondary School Teachers |  
**Advanced mathematics** |  | 0-6
Additional advanced course if needed to reach at least two math courses above 500 |  
**MATH/ COMP SCI 513** | Numerical Linear Algebra |  
**MATH/ COMP SCI 514** | Numerical Analysis |  
MATH 519 | Ordinary Differential Equations |  
MATH 521 | Analysis I |  
MATH 531 | Probability Theory |  
MATH 535 | Mathematical Methods in Data Science |  
MATH 540 | Linear Algebra II |  
MATH 541 | Modern Algebra |  
MATH 542 | Modern Algebra |  
MATH 551 | Elementary Topology |  
MATH 561 | Differential Geometry |  
MATH 567 | Modern Number Theory |  
MATH 570 | Fundamentals of Set Theory |  
MATH/ PHILOS 571 | Mathematical Logic |  
MATH 619 | Analysis of Partial Differential Equations |  
MATH 627 | Introduction to Fourier Analysis |  
MATH 629 | Introduction to Measure and Integration |  
MATH/I SY E/ OTM/STAT 632 | Introduction to Stochastic Processes |  

**Total Credits** | 24
RESIDENCE AND QUALITY OF WORK

- 2.000 GPA on all MATH courses and courses eligible for the major.\(^2\)
- 2.000 GPA on at least 15 credits of upper level credit in the major.\(^3\)
- 15 credits in MATH in the major taken on the UW-Madison campus.\(^4\)

FOOTNOTES

1 Courses options below may have prerequisites outside of those listed for this program.
2 This includes any course with a MATH prefix (including those cross-listed with MATH) regardless of its appearance in the tables above as well as only those specific non-MATH courses listed in the tables above.
3 This includes all MATH courses (including those crosslisted with MATH) which are numbered 307 and above, regardless of appearing in the course lists above, as well as only those non-MATH courses which appear in the lists above and carry the advanced LAS designation.
4 This includes only those courses with a MATH prefix (or cross-listed with MATH) numbered 307 and above.

FOUR-YEAR PLAN

SAMPLE FOUR-YEAR PLAN

This Sample Four-Year Plan is a tool to assist students and their advisor(s). Students should use it—along with their DARS report, the Degree Planner, and Course Search & Enroll tools—to make their own four-year plan based on their placement scores, credit for transferred courses and approved examinations, and individual interests. As students become involved in athletics, honors, research, student organizations, study abroad, volunteer experiences, and/or work, they might adjust the order of their courses to accommodate these experiences. Students will likely revise their own four-year plan several times during college.

In general, your four-year plan in mathematics should be organized along the following sequence: 1) Calculus, 2) Linear Algebra, 3) Required Intermediate level courses, 4) Additional intermediate level courses as needed, 5) Required advanced level course, 6) Additional advanced level courses.

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>MATH 221</td>
<td></td>
<td>5 MATH 222</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Literature Breadth</td>
<td></td>
<td>3 L&amp;S Breadth - Literature</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Communication A</td>
<td></td>
<td>3 Ethnic Studies</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Foreign Language (if required)</td>
<td></td>
<td>4 Foreign Language (if required)</td>
<td></td>
<td>4</td>
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<td><strong>Total Credits</strong></td>
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<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 234(^1)</td>
<td></td>
<td>4 MATH Required Linear Algebra</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Humanities Breadth</td>
<td></td>
<td>3 MATH Required Probability or Combinatorics</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Communication B</td>
<td></td>
<td>3 Humanities Breadth</td>
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<table>
<thead>
<tr>
<th>Junior</th>
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<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 461</td>
<td></td>
<td>3 MATH Required Statistics</td>
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<td>3</td>
</tr>
<tr>
<td>MATH Required Analysis</td>
<td></td>
<td>3 MATH Required History of Mathematics</td>
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<tr>
<td>Social Sciences Breadth</td>
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<td>3 Social Science Breadth</td>
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<tr>
<td>Biological Sciences Breadth</td>
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<td>3 Biological Sciences Breadth</td>
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</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3 Elective</td>
<td></td>
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</tr>
<tr>
<td><strong>Total Credits</strong></td>
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<table>
<thead>
<tr>
<th>Senior</th>
<th>Fall</th>
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<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH Required Algebra</td>
<td></td>
<td>3 MATH Required Advance course or Elective</td>
<td></td>
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<tr>
<td>Elective</td>
<td></td>
<td>3 MATH/CURRIC 471</td>
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<tr>
<td>Social Science Breadth</td>
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<tr>
<td>Elective</td>
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<td><strong>Total Credits</strong></td>
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<td><strong>15</strong></td>
</tr>
</tbody>
</table>

Total Credits 120

FOOTNOTES

1 Students should declare their major upon the successful completion of this course.