MATHEMATICS, BSLAS

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Mathematics

Students in the Mathematics major can choose one of the following to complete the major:

Mathematics major (p. 1)
Mathematics major, Applied Mathematics concentration (http://catalog.illinois.edu/undergraduate/las/mathematics-bslas/applied-mathematics/)
Mathematics major, Data Optimization concentration (http://catalog.illinois.edu/undergraduate/las/mathematics-bslas/data-optimization/)
Mathematics major, Math Doctoral Preparation concentration (http://catalog.illinois.edu/undergraduate/las/mathematics-bslas/math-doctoral-preparation/)
Mathematics major, Mathematics Teaching concentration (http://catalog.illinois.edu/undergraduate/las/mathematics-bslas/teaching-mathematics/)

Mathematics is a broad discipline that contains a range of areas of specialization within it. The required core courses provide fundamental background for mathematics in general. The concentrations allow the student to broaden this background or begin to specialize. Students must complete the core courses and a concentration.

An entering student in mathematics should have academic preparation to enroll in MATH 220 (http://catalog.illinois.edu/search/?P=MATH%20220) during the first semester. Admission to MATH 220 (http://catalog.illinois.edu/search/?P=MATH%20220) requires an acceptable ALEKS score. A student should attain grades of B in calculus in order to complete the advanced courses successfully.

Undergraduate programs in Mathematics
Actuarial Science, BSLAS (http://catalog.illinois.edu/undergraduate/las/actuarial-science-bslas/)

Mathematics, BSLAS (p. 1)

Mathematics & Computer Science, BSLAS (http://catalog.illinois.edu/undergraduate/eng_las/mathematics-computer-science-bslas/)

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A Major Plan of Study form, declaring concentration and supporting coursework, must be completed and submitted to the LAS Student Academic Affairs Office except for students in the Teaching of Mathematics concentration. Please complete this form with an advisor in the Mathematics Undergraduate Office within 1-2 semesters of completing MATH 347 or MATH 348.

Departmental distinction: Distinction will be awarded on the basis of selection of 400-level courses in mathematics and the grade point average. Graduation with High Distinction or Highest Distinction in Mathematics requires participation in the Program for Distinction in Mathematics or Mathematics Education. Full details are available at the departmental website.

General education: Students must complete the Campus General Education (https://courses.illinois.edu/) requirements including the campus general education language requirement.

Minimum required major and supporting course work: normally equates to 46-49 hours including 27-35 hours of mathematics beyond calculus, 3-4 hours of computer science, and 12 hours of supporting coursework. Twelve (12) hours of 300- and 400-level non-S/U-graded courses in the major must be taken on this campus.

Minimum hours required for graduation: 120 hours.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 241</td>
<td>Calculus III (Students should have credit for MATH 220/MATH 221 and MATH 231 before enrolling in MATH 241.)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 347 or MATH 348</td>
<td>Fundamental Mathematics</td>
<td>3-4</td>
</tr>
<tr>
<td>MATH 416</td>
<td>Abstract Linear Algebra (Students may not receive credit for both MATH 416 and either ASRM 406 or MATH 415.)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 417 or MATH 427</td>
<td>Intro to Abstract Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 424 or MATH 444</td>
<td>Honors Real Analysis (If MATH 424 or MATH 447 is completed, a requirement for the Math Doctoral Preparation concentration has been satisfied.)</td>
<td>3</td>
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</tbody>
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or MATH 447 or MATH 461
Real Variables or Probability Theory (If STAT 400 is completed, a requirement for the Data Optimization concentration has been satisfied.)

or STAT 400 or CS 101
Statistics and Probability I or Intro Computing: Engrg & Sci

3-4

CS 101 or CS 124 or CS 125
Intro to Computer Science I or Introduction to Computer Science

3-4

Approved supporting coursework outside Mathematics (Supporting coursework may be completed with 12 advisor-approved hours of a single math-related area outside of MATH/ASRM not used for a major requirement and must include at least one advanced course; ANY minor which is fulfilled with at least 12 hours of courses, including one advanced course, not used for the major nor cross-listed with MATH/ASRM; or any double major or dual degree.)

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Mathematics Courses

Select a total of two courses from two of the following three lists:

Geometry

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>MATH 402</td>
<td>Non Euclidean Geometry</td>
</tr>
<tr>
<td>MATH 403</td>
<td>Euclidean Geometry</td>
</tr>
<tr>
<td>MATH 423</td>
<td>Differential Geometry</td>
</tr>
<tr>
<td>MATH 481</td>
<td>Vector and Tensor Analysis</td>
</tr>
</tbody>
</table>

Differential Equations and Complex Analysis

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>MATH 441</td>
<td>Differential Equations</td>
</tr>
<tr>
<td>MATH 446</td>
<td>Applied Complex Variables</td>
</tr>
<tr>
<td>MATH 448</td>
<td>Complex Variables</td>
</tr>
</tbody>
</table>

Number Theory

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 453</td>
<td>Number Theory</td>
</tr>
</tbody>
</table>

Two additional 400-level or approved 500-level mathematics courses. (Coursework awarded S/U grades may not be used to fill this requirement.)

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Total Hours

46-49

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1. Ability to construct proofs and recognize when proofs are complete.
2. Ability to use theorems in order to solve problems.
3. Technical proficiency in calculus and linear algebra
4. The ability to apply mathematics; translating real-world problems into mathematical problems and solving them.

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department website: https://www.math.illinois.edu/
department faculty: Mathematics Faculty (https://math.illinois.edu/directory/faculty/)
advising: Math advising (https://math.illinois.edu/academics/undergraduate-program/undergraduate-advising/)
overview of college admissions & requirements: Liberal Arts & Sciences (http://catalog.illinois.edu/schools/las/academic-units/)
college website: https://las.illinois.edu/
email: mathadvising@illinois.edu