

# MATHEMATICS: APPLIED MATHEMATICS , BSLAS

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

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 (<http://catalog.illinois.edu/undergraduate/las/mathematics-bslas/#text>)

Mathematics & Computer Science, BSLAS ([http://catalog.illinois.edu/undergraduate/eng\\_las/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/gened/DEFAULT/DEFAULT/>) **requirements including the campus general education language requirement.**

**Minimum required major and supporting course work: Normally equates to 49-52 hours including 27-35 hours of mathematics beyond calculus, 3-4 hours of computer science, and 12 hours of supporting coursework.**

**Twelve 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.**

Code	Title	Hours
<b>Required Core Courses</b>		
MATH 241	Calculus III (Students should have credit for MATH 220/MATH 221 and MATH 231 before enrolling in MATH 241)	4
MATH 347	Fundamental Mathematics	3
MATH 416	Abstract Linear Algebra (Students may not receive credit for both MATH 416 and either ASRM 406 or MATH 415)	3
MATH 417 or MATH 427	Intro to Abstract Algebra Honors Abstract Algebra	3
MATH 424 or MATH 444 or MATH 447	Honors Real Analysis (If MATH 424 or MATH 447 is completed, a requirement for the Math Doctoral Preparation concentration has been satisfied) Elementary Real Analysis Real Variables	3
MATH 461 or STAT 400	Probability Theory (If STAT 400 is completed, a requirement for the Data Optimization concentration has been satisfied) Statistics and Probability I	3-4
CS 101 or CS 124 or CS 125	Intro Computing: Engrg & Sci Introduction to Computer Science I 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)		12
<b>Applied Mathematics Courses</b>		
MATH 441	Differential Equations	3
MATH 446 or MATH 448	Applied Complex Variables Complex Variables	3
CS 357 or MATH 442 or MATH 489	Numerical Methods I Intro Partial Diff Equations Dynamics & Differential Eqns	3
MATH 412 or MATH 413 or MATH 482	Graph Theory Intro to Combinatorics Linear Programming	3
One additional 400-level or approved 500-level mathematics course not graded with S/U grading (Courses awarded S/U grades may not be used to fill this requirement)		3
<b>Total Hours</b>		<b>49-51</b>

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### Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment

programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. See the corresponding section on the Degree and General Education Requirements page (<http://catalog.illinois.edu/general-information/degree-general-education-requirements/>).

**First Year**

First Semester	Hours	Second Semester	Hours
Free elective course		1 MATH 231	3
MATH 220 or 221		4 CS 101 (or CS 124 or CS 125)	3
Composition I or General Education course		3 General Education course or Composition I	4
Language Other than English (3rd level)		4 Language Other than English (4th level)	4
General Education course		3	
		<b>15</b>	<b>14</b>

**Second Year**

First Semester	Hours	Second Semester	Hours
MATH 241		4 MATH 347	3
General Education course		3 STAT 400 or MATH 461	4
General Education course		3 General Education course	3
Supporting Coursework		3 Supporting Coursework	3
Free elective course		3 Free elective course	2
		<b>16</b>	<b>15</b>

**Third Year**

First Semester	Hours	Second Semester	Hours
MATH 416		3 MATH 444 (or MATH 447 or MATH 424)	3
MATH 441		3 MATH 442 (or MATH 489 or CS 357)	3
General Education course		3 General Education course	3
General Education course		3 Supporting Coursework	3
Supporting Coursework		3 Free elective course	3
		<b>15</b>	<b>15</b>

**Fourth Year**

First Semester	Hours	Second Semester	Hours
MATH 417 or 427		3 MATH 412 (or MATH 413 or MATH 482)	3

MATH 446 or 448	3 400-500 level MATH course	3
General Education course	3 General Education course	3
Free elective course	3 Free elective course	3
Free elective course	3 Free elective course	3
		<b>15</b>

**Total Hours 120**

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Department of Mathematics website (<https://math.illinois.edu/>)  
 Department of Mathematics faculty (<https://math.illinois.edu/directory/faculty/>)

Mathematics Advising (<https://math.illinois.edu/academics/undergraduate-program/undergraduate-advising/>)  
 Mathematics Advising email ([mathadvising@illinois.edu](mailto:mathadvising@illinois.edu))

College of Liberal Arts and Sciences website (<https://las.illinois.edu/>)  
 Overview of Admissions & Requirements for the College of LAS (<http://catalog.illinois.edu/schools/las/academic-units/>)