

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/)

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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.

Graduation Requirements

Minimum hours required for graduation: 120 hours.

Minimum required major and supporting course work: Normally equates to 57-62 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.

University Requirements

Minimum of 40 hours of upper-division coursework, generally at the 300- or 400-level. These hours can be drawn from all elements of the degree.

Students should consult their academic advisor for additional guidance in fulfilling this requirement.

The university and residency requirements can be found in the Student Code (<https://studentcode.illinois.edu/article3/part8/3-801/>) (§ 3-801) and in the Academic Catalog (<http://catalog.illinois.edu/general-information/degree-general-education-requirements/>).

General Education Requirements

Follows the campus General Education (Gen Ed) requirements (<https://courses.illinois.edu/gened/DEFAULT/DEFAULT/>). Some Gen Ed requirements may be met by courses required and/or electives in the program.

Code	Title	Hours
	Composition I	4-6
	Advanced Composition	3
	Humanities & the Arts (6 hours)	6
	Natural Sciences & Technology (6 hours)	6
	Social & Behavioral Sciences (6 hours)	6
	Cultural Studies: Non-Western Cultures (1 course)	3
	Cultural Studies: US Minority Cultures (1 course)	3
	Cultural Studies: Western/Comparative Cultures (1 course)	3
	Quantitative Reasoning (2 courses, at least one course must be Quantitative Reasoning I)	6-10
	fulfilled by CS 101 or CS 124; MATH 220 or MATH 221; MATH 231, MATH 241	
	Language Requirement (Completion of the fourth semester or equivalent of a language other than English is required)	0-20

Code	Title	Hours
	Orientation and Professional Development	
LAS 101	Design Your First Year Experience	1
	OR	
LAS 100 & LAS 101	Success in LAS for International Students and Design Your First Year Experience	3
	OR	
LAS 102	Transfer Advantage	1

Code	Title	Hours
	Major Core Requirements	
MATH 220 or MATH 221	Calculus I	4 or 5
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 347 or MATH 314	Fundamental Mathematics Introduction to Higher Mathematics	3 or 4
MATH 416	Abstract Linear Algebra	3
MATH 417 or MATH 427	Intro to Abstract Algebra Honors Abstract Algebra	3
MATH 461 or STAT 400	Probability Theory Statistics and Probability I	3-4
CS 101 or CS 124	Intro Computing: Engrg & Sci Introduction to Computer Science I	3

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

Code	Title	Hours
Applied Mathematics Concentration		
MATH 424	Honors Real Analysis	3
or MATH 444	Elementary Real Analysis	
or MATH 447	Real Variables	
MATH 441	Differential Equations	3
MATH 446	Applied Complex Variables	3
or MATH 448	Complex Variables	
CS/MATH 357	Numerical Methods I	3
or MATH 442	Intro Partial Diff Equations	
or MATH 489	Dynamics & Differential Eqns	
MATH 412	Graph Theory	3
or MATH 413	Intro to Combinatorics	
or MATH 482	Linear Programming	

One additional 400-level or approved 500-level MATH course that is not graded as S/U. 3

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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
MATH 220 or 221	4	MATH 231	3
Composition I or General Education course	3	CS 101 or 124 (CS 124)	3
Language Other than English (3rd level)	4	General Education Course or Composition I	4
General Education course	4	Language Other than English (4th level)	4

LAS 101 (or Elective)	1		
		15	14

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
		16	15

Third Year			
First Semester	Hours	Second Semester	Hours
MATH 416	3	MATH 444, 447, or 424	3
MATH 441	3	MATH 442, 489, or CS 357	3
General Education course	3	General Education course	3
General Education course	3	Upper-division Supporting Coursework	3
Supporting Coursework	3	Free elective course	3
		15	15

Fourth Year			
First Semester	Hours	Second Semester	Hours
MATH 417 or 427	3	MATH 412, 413, or 482 (or MATH 413 or MATH 482)	3
MATH 446 or 448	3	400-level MATH course (may not use an S/U-graded 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
		15	15

Total Hours 120

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Students with a BSLAS degree in Mathematics will be able to:

1. construct proofs and recognize when proofs are complete.
2. use theorems in order to solve problems.

3. demonstrate technical proficiency in calculus and linear algebra.
4. apply mathematics; translating real-world problems into mathematical problems and solving them.

Additionally, students in this concentration will be able to develop and test mathematical models of physical, chemical, and biological systems.

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Department of Mathematics (<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/>)
mathadvising@illinois.edu

College of Liberal Arts and Sciences (<https://las.illinois.edu/>)

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