MATHEMATICS: DATA OPTIMIZATION, BSLAS

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Mathematics, Data Optimization 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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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 46-49 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
Required Core Courses		
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	Intro to Abstract Algebra	3
or MATH 427	Honors Abstract Algebra	
MATH 424	Honors Real Analysis (If MATH 424 or MATH 447 is completed, a requirement for the Math Doctoral Preparation concentration has been satisfied.)	3
or MATH 444	Elementary Real Analysis	
or MATH 447	Real Variables	
MATH 461	Probability Theory (If STAT 400 is completed, a requirement for the Data Optimization concentration has been satisfied.)	3 or 4
or STAT 400	Statistics and Probability I	
CS 101	Intro Computing: Engrg & Sci	3-4
or CS 124	Introduction to Computer Science I	
or CS 125	Introduction to Computer Science	
	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
Data Optimization Courses		
CS 357	Numerical Methods I	3
MATH 412	Graph Theory	3
or MATH 484	Nonlinear Programming	
STAT 410	Statistics and Probability II	3
or STAT 420	Methods of Applied Statistics	
MATH 482	Linear Programming	3
Total Hours		**46-48**

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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

First Semester	Hours	Second Semester	Hours
Language Other than English (3rd level)	4	Language Other than English (4th level)	4
General Education course	3		
	15		**14**

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

Second Year

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

Third Year

First Semester	Hours	Second Semester	Hours
MATH 416	3	MATH 444 (or MATH 447 or MATH 424)	3
STAT 410 or 420	3	CS 357	3
General Education course	3	General Education course	3
Free elective course	3	Free elective course	3
Supporting Coursework	3	Supporting Coursework	3
	15		**15**

Fourth Year

First Semester	Hours	Second Semester	Hours
MATH 417 or 427	3	MATH 412 or 484	3
MATH 482	3	General Education 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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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)

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

Information listed in this catalog is current as of 05/2024