



Mathematics - B.A.

College of Arts and Sciences

The department offers two programs leading to the B.A. or B.S. degree. Students may major in mathematics by completing the requirements for either: Option A, Mathematics or Option B, Mathematical Sciences.

The mathematics option consists of courses offered solely by the department of mathematics and is intended for those who wish to follow a traditional mathematics career path. The mathematical sciences option consists of courses offered by the departments of computer science, mathematics and statistics, and is intended for those who opt for a career that requires the application of mathematics. The requirements for these programs are outlined below.

121 hours (minimum)

Any student earning a Bachelor of Arts (BA) degree must complete a minimum of 39 hours at the 300+ level. These hours are generally completed by the major requirements. However, keep this hour requirement in mind as you choose your course work for the requirements in the major. A complete description of College requirements for a Bachelor of Arts degree can be found on page 94 of the 2004-2005 UK Bulletin.

University Studies Program Requirements

- I. Math (completed by Premajor Requirement)
II. Foreign Language (placement exam recommended) 0-8
III. Inference-Logic (completed by Premajor Requirement)
IV. Written Communication 3-6
V. Oral Communication 3
VI. Natural Sciences 6
VII. Social Sciences 6
VIII. Humanities 6
IX. Cross-Cultural (choose a 300+ level Humanities course) 3
X. Electives (choose two Natural Science courses) 6

USP hours: 33-44

College Requirements

- I. Foreign Language (placement exam recommended) 0-8
II. Disciplinary Requirements
a. Natural Science (completed by USP Elective Requirement) 6
b. Social Science 6
c. Humanities (partially completed by USP Cross-Cultural Requirement) 3
III. Laboratory or Field Work 1
IV. Electives 6

College Requirement hours: 16-24

OPTION A - Mathematics

Premajor Requirements

- ^MA 113 Calculus I 4
MA 114 Calculus II 4
CS 115 Introduction to Computer Programming 3

Premajor hours: 11

Major Requirements

Major Core Requirements

- MA 213 Calculus III 4
MA 214 Calculus IV 3
MA 322 Matrix Algebra and its Applications 3

Major Core hours: 10

Other Course Work Required for the Major

From the Major Department:

Choose 18 hours of 300+ level mathematics courses. One of the following sequences, or a substitute approved by the Director of Undergraduate Studies, must be included: MA 351/352, MA 361/362, MA 471G/472G, MA 481G/483G, CS/MA 321/422, CS/MA 416G and MA/STA 417G, MA 433G/485G; at least 2 of the following must be included (they can also count as the sequence if appropriate): MA 351, 352, 361, 362, 471G, 472G. May not include MA 322. 18

From Outside the Major Department

Choose 14 hours outside Mathematics at the 300+ level. Courses are generally chosen from physics, chemistry, biology, logic, statistics, computer science, economics, and engineering. 200+ level courses used to satisfy USP and College requirements can also be counted here 14

Other Major hours: 32

OPTION B - Mathematical Sciences

Premajor Requirements

- ^MA 113 Calculus I 4
MA 114 Calculus II 4
CS 115 Introduction to Computer Programming 3
CS 215 Introduction to Program Design, Abstraction and Problem Solving 4

Premajor hours: 15

Major Requirements

Major Core Requirements

- MA 213 Calculus III 4
MA 214 Calculus IV 3
CS 216 Introduction to Software Engineering 3
STA 281 Probability and Statistics Using Interactive Computer Techniques 3
MA/STA 320 Introductory Probability 3
CS/MA 321 Introduction to Numerical Methods 3
STA 321 Basic Statistical Theory I 3
MA 322 Matrix Algebra and its Applications 3
CS/MA 416G Principles of Operations Research I 3
STA 422G Basic Statistical Theory II 3

Major Core hours: 31

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## Other Course Work Required for the Major

### From the Major Department:

Choose one of the following: MA 361, MA 433G, MA 471G ..... 3

Choose 9 hours of 300+ level mathematics courses. One of the following sequences, or a substitute approved by the Director of Undergraduate Studies, must be included: MA 481G/483G, CS/MA 321/422, CS/MA 416G and MA/STA 417G, CS 315/450G. A substitute sequence may be approved upon petition by the student to the Director of Undergraduate Studies. Approved courses in the mathematical sciences include those courses in computer science, engineering mechanics, mathematics, and statistics which are not of a service nature ..... 9

### From Outside the Major Department

Choose 9 hours outside Mathematics at the 300+ level. 200+ level courses used to satisfy USP and College requirements can also be counted here ..... 9

**Other Major hours:** ..... 21

**Total Minimum Hours Required for Degree** ..... 121

*^Course used towards completion of a USP or College Requirement.*