

# Mathematics - B.S.

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.

## 120 hours (minimum)

Any student earning a Bachelor of Science (BS) degree must complete a minimum of 60 hours in natural, physical, mathematical, and computer science. A complete description of College requirements for a Bachelor of Science degree, including a specific listing of courses applicable to the 60-hour requirement, can be found on pages 113-114 of the *Arts and Sciences* section of the 2011-2012 *Undergraduate Bulletin* on the Web at: [www.uky.edu/Registrar/bulletinCurrent/a\\_s.pdf](http://www.uky.edu/Registrar/bulletinCurrent/a_s.pdf).

### UK Core Requirements

See the *UK Core* section of the 2011-2012 *Undergraduate Bulletin* at: [www.uky.edu/Registrar/bulletinCurrent/ukc.pdf](http://www.uky.edu/Registrar/bulletinCurrent/ukc.pdf) for the complete UK Core requirements. The courses listed below are (a) recommended by the college, or (b) required courses that also fulfill UK Core areas. Students should work closely with their advisor to complete the UK Core requirements.

#### I. Intellectual Inquiry in Arts and Creativity

Choose one course from approved list ..... 3

#### II. Intellectual Inquiry in the Humanities

Choose one course from approved list ..... 3

#### III. Intellectual Inquiry in the Social Sciences

Choose one course from approved list ..... 3

#### IV. Intellectual Inquiry in the Natural, Physical, and Mathematical Sciences

Choose one course from approved list ..... 3

#### V. Composition and Communication I

CIS/WRD 110 Composition and Communication I ..... 3

#### VI. Composition and Communication II

CIS/WRD 111 Composition and Communication II ..... 3

#### VII. Quantitative Foundations

MA 113 Calculus I ..... 4

#### VIII. Statistical Inferential Reasoning

Choose one course from approved list ..... 3

#### IX. Community, Culture and Citizenship in the USA

Choose one course from approved list ..... 3

#### X. Global Dynamics

Choose one course from approved list ..... 3

**UK Core Hours** ..... 31

### Graduation Writing Requirement

After attaining sophomore status, students must complete a Graduation Writing Requirement course. Please see your academic advisor for courses that meet this requirement.

**Graduation Writing Requirement Hours:** ..... 3

### College Requirements

I. Foreign Language (*placement exam recommended*) ..... 0-14

II. Disciplinary Requirements

a. Natural Science ..... 3

b. Social Science ..... 3

c. Humanities ..... 3

III. Laboratory or Field Work ..... 1

IV. Electives ..... 6

**College Requirement hours:** ..... 16-30

### 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

or

MA 261 Introduction to Number Theory ..... 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 416G and MA/STA 417G; at least two 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 College requirements can also be counted here ..... 14

**Other Major hours:** ..... 32

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The University of Kentucky is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award baccalaureate, masters, doctorate, and professional degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call 404-679-4500 for questions about the accreditation of the University of Kentucky.

# Mathematics (B.S.) • 2

## 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

### Other Course Work Required for the Major

#### From the Major Department:

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

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

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

#### Electives

Choose electives to lead to the minimum total of 120 hours required for graduation ..... 0-9

#### Total Minimum Hours

**Required for Degree** ..... 120

*\*Course used towards completion of a UK Core Requirement.*

### Mathematics Cooperative Education

Qualified students who major in mathematics may participate in the Mathematical Sciences Cooperative Education Program which provides the opportunity for alternate semesters of academic study and full-time employment in business or industry. Guidelines and application forms are available in the Engineering/Math Sciences Co-op Program Office, 320 Robotics Building.