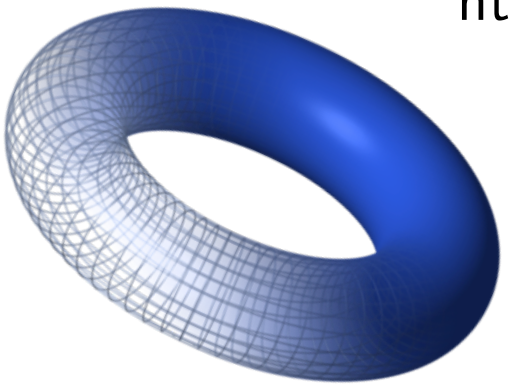
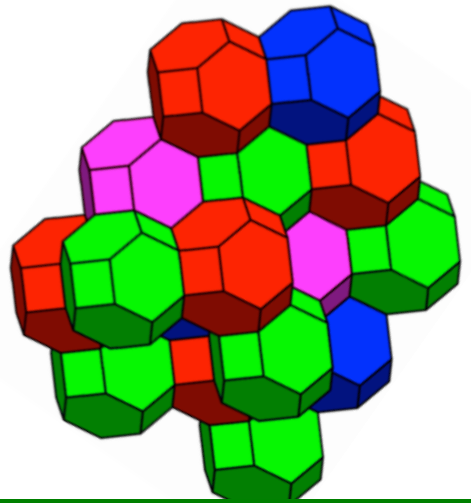
Math Undergraduate Program

Alberto Corso, DUS

https://math.as.uky.edu/undergrad



Department of Mathematics
University of Kentucky



Officers of the Department of Mathematics

Dr. Uwe Nagel	Chair of the Department, POT 723 russell.brown@uky.edu
Dr. Alberto Corso	Director of Undergraduate Studies, POT 701 alberto.corso@uky.edu
Dr. Benjamin Braun	Director of Graduate Studies, POT 831 benjamin.braun@uky.edu
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Dr. Jonathan Clark	Mathskeller Director, POT 757 jon.clark@uky.edu
Ms. Rejeana Cassady	Academic Administration Associate, POT 731 rejeana.cassady@uky.edu

Math Degrees

Major Degrees

- BA Bachelor of Arts
- BS Bachelor of Sciences

Each has two options:

- Option A: Mathematics
- Option B Mathematical Sciences

- Complete a minimum of 120 credit hours and earn a 2.0 cumulative grade point average (GPA)
- Mathematics Departmental Honors Requirement: 3.5 cumulative GPA or above
- Dean's List Requirement: 3.6 cumulative GPA or above

We also offer a **Minor in Math**

Degree Requirements for BA and BS

- UK Core — 31 credits
- GCCR (Composition and Communication) — 3 credits (Starting Fall 2014)
- College — 25-39 credits (BA); 16-30 credits (BS)
- Math Department — 53 (option A) or 55 (option B) credits
- Electives — 0-9 credits (BS)

University of Kentucky

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.

120 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. See the complete description of College requirements for a Bachelor of Arts degree in the *Arts and Sciences* section of the *2020-2021 Undergraduate Bulletin.*

UK Core Requirements

See the *UK Core* section of the *2020-2021 Undergraduate Bulletin* 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
STA 296 Statistical Methods and Motivations 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 Composition and Communication Requirement (GCCR)

MA 391 Mathematics: Composition and Communication 3

Graduation Composition and Communication Requirement hours (GCCR) 3

College Requirements

I. Foreign Language *(placement exam recommended)* 0-14
II. Disciplinary Requirements
  a. Natural Science 6
  b. Social Science 6
  c. Humanities 6
III. Laboratory or Field Work 1
IV. Electives 6

College Requirement hours: 25-39

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

– CONTINUED –

Mathematics (B.A.) • 2

OPTION B - Mathematical Sciences

Premajor Requirements

*MA 113 Calculus I
or
*MA 137 Calculus I with Life Science Applications 4

MA 114 Calculus II
or
MA 138 Calculus II with Life Science Applications 4

CS 115 Introduction to Computer Programming 3

Premajor hours: 11

Major Requirements

Major Core Requirements

CS 215 Introduction to Program Design, Abstraction and Problem Solving 4
MA 213 Calculus III 4
MA 214 Calculus IV 3
MA/STA 320 Introductory Probability 3
MA/CS 321 Introduction to Numerical Methods 3
MA 322 Matrix Algebra and its Applications 3
STA 321 Basic Statistical Theory I 3

plus a two-semester sequence chosen from the following:

MA/CS 340 Applicable Algebra
and
MA/CS 415G Combinatorics and Graph Theory

MA 432G Methods of Applied Mathematics I
and
MA 433G Introduction to Complex Variables

MA 481G Differential Equations
and
MA 483G Introduction to Partial Differential Equations

MA/CS 416G Introduction to Optimization
and
MA/STA 417G Decision Making Under Uncertainty 6

Major Core hours: 29

Other Course Work Required for the Major

From the Major Department:
Choose six hours of acceptable MA courses at the 300 level and above (MA 308 may not be used) 6

From Outside the Major Department
Nine hour supporting program chosen from one area outside mathematics. The Director of Undergraduate Studies must approve the supporting program. Courses in the supporting program must be at the 300 level and above. Cross-listed courses may be used for the supporting program provided they are not used to satisfy another major requirement 9

Other Major hours: 15

Total Minimum Hours Required for Degree 120

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

University of Kentucky

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, is in the *Arts and Sciences* section of the *2020-2021 Undergraduate Bulletin*.

UK Core Requirements

See the *UK Core* section of the *2020-2021 Undergraduate Bulletin* 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 Composition and Communication Requirement (GCCR)

MA 391 Mathematics: Composition and Communication 3

Graduation Composition and Communication Requirement hours (GCCR) 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

– CONTINUED –

Mathematics (B.S.) • 2

OPTION B - Mathematical Sciences

Premajor Requirements

*MA 113 Calculus I
or
*MA 137 Calculus I with Life Science Applications 4

MA 114 Calculus II
or
MA 138 Calculus II with Life Science Applications 4

CS 115 Introduction to Computer Programming 3

Premajor hours: 11

Major Requirements

CS 215 Introduction to Program Design, Abstraction and Problem Solving 4
MA 213 Calculus III 4
MA 214 Calculus IV 3
MA/STA 320 Introductory Probability 3
MA/CS 321 Introduction to Numerical Methods 3
MA 322 Matrix Algebra and its Applications 3
STA 321 Basic Statistical Theory I 3

plus a two-semester sequence chosen from the following:

MA/CS 340 Applicable Algebra
and
MA/CS 415G Combinatorics and Graph Theory

MA 432G Methods of Applied Mathematics I
and
MA 433G Introduction to Complex Variables

MA 481G Differential Equations
and
MA 483G Introduction to Partial Differential Equations

MA/CS 416G Introduction to Optimization
and
MA/STA 417G Decision Making Under Uncertainty 6

Major Core hours: 29

Other Course Work Required for the Major

From the Major Department:
Choose six hours of acceptable MA courses at the 300 level and above (MA 308 may not be used) 6

From Outside the Major Department
Nine hour supporting program chosen from one area outside mathematics. The Director of Undergraduate Studies must approve the supporting program. Courses in the supporting program must be at the 300 level and above. Cross-listed courses may be used for the supporting program provided they are not used to satisfy another major requirement 9

Other Major hours: 15

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.

Math Major Requirements: Option A

Premajor Requirements (11 credits):

- MA 113, Calculus I
- MA 114, Calculus II
- CS 115, Introduction to Computer Programming

Major Core Requirements (10 credits):

- MA 213, Calculus III
- One of
  - MA 214, Calculus IV
  - MA 261, Introduction to Number Theory
- MA 322, Matrix Algebra and its Applications

Other Major hours (32 credits)

18 hours of 300+ level Mathematics courses (other than MA 322)

Must include one of the sequences:

Topology:	MA 351/352
Algebra:	MA 361/362
Advanced Calculus:	MA 471G/MA 472G
Differential Equations:	MA 481G/MA 483G
Optimization:	MA 416G/417G

Must include MA 391 (Composition and Communication)

and

at least 2 of the following: MA 351, 352, 361, 362, 471G, 472G

14 hours of 300+ level courses outside of Mathematics

Courses used to satisfy College requirements can also be counted here

Electives

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

Math Major Requirements: Option B

Premajor Requirements (11 credits):

- MA 113 **or** MA 137, Calculus I with Life Science Applications
- MA 114 **or** MA 138, Calculus II with Life Science Applications
- CS 115, Introduction to Computer Programming

Major Core Requirements (29 credits):

- CS 215, Introduction to Program Design, Abstraction and Problem Solving
- MA 213, Calculus III
- MA 214, Calculus IV
- MA/STA 320, Introductory Probability
- MA/CS 321, Introduction to Numerical Analysis
- ~~STA 321, Basic Statistical Theory I~~ STA 525, Intro Stat Inference
- MA 322, Matrix Algebra and its Applications

Plus a two-semester sequence chosen from the following:

- MA/CS 340 and MA/CS 415G
  Applicable Algebra and Combinatorics and Graph Theory
- MA 432G and MA 433G
  Methods of Applied Mathematics I and Introduction to Complex Variables
- MA 481G and MA 483G
  Differential Equations and Introduction to Partial Differential Equations
- MA/CS 416G I and MA/STA 417G
  Introduction to Optimization and Decision Making Under Uncertainty

Other Major hours (15 credits)

From the Math Department (6 credits)

Choose six hours of MA courses at the 300+ level (MA 308 may not be used)

[**Comment:** The GCCR course MA 391 (Composition and Communication) can be one of these!]

From Outside the Major Department (9 credits)

Nine hour from a supporting program chosen from one area outside mathematics. The DUS must approve the supporting program. Courses in the supporting program must be at the 300+ level. Cross-listed courses may be used for the supporting program provided they are not used to satisfy another major requirement.

Electives

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

General Advice

Students should select their upper-division coursework based on their goals and interests. Below are some suggestions:

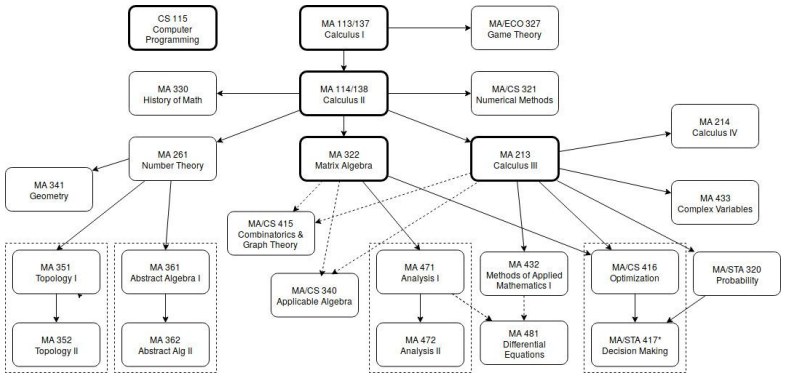
Preparation for graduate school:
MA 351, MA 352, MA 361, MA 362, MA 471G, MA 472G

Secondary education:
MA 310, MA 320, MA 330, MA 341, MA 361, MA 362

Mathematics and computer science:
MA 320, MA 321, MA 340, MA 361, MA 362, MA 415G

Mathematics and engineering or physical science:
MA 320, MA 321, MA 361, MA 471G and select from MA 351, MA 362, MA 432G, MA 433G, MA 472G, MA 481G, MA 483G

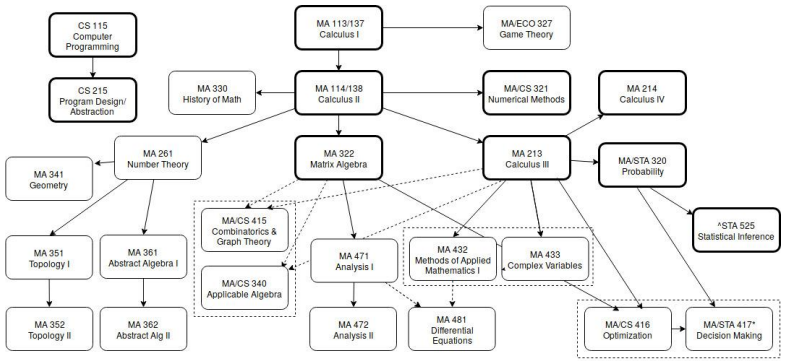
B.S. Mathematics - Option A ("Pure Math")



Bold boxes are required for all option A students and students are advised to do them as early as possible. Dashed arrows indicate either course satisfies the pre-req. Dashed boxes indicate sequence classes.
* Possible pre-req change soon

Requirements:
☐ MA 113 Calc I ☐ MA 114 Calc II ☐ MA 213 Calc III ☐ MA 322 Matrix Alg ☐ CS 115 Programming
☐ MA 214 Calc IV or MA 261 Number Theory ☐ Upper-level sequence (351/352, 361/362, 471/472, or 416/417)
☐ Additional 12 hrs of 300+ MA courses ☐ 14 hrs outside department (refer to official degree sheet for details)
☐ MA 391 (prereqs, one from each: 213 | 214 or 261 | 322 | 321, 351, 361, or 471 | 30+ completed credit hrs)

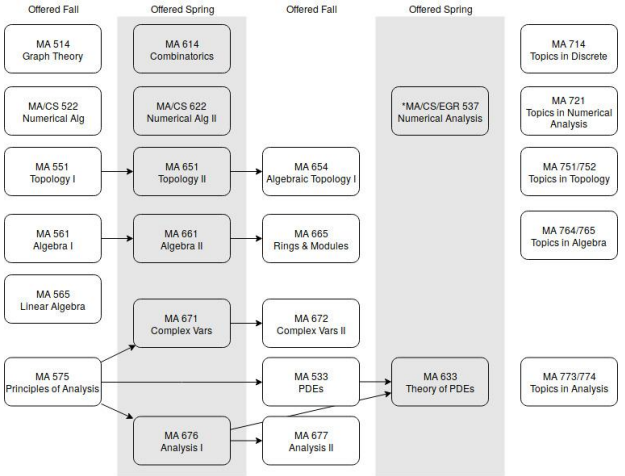
B.S. Mathematics - Option B ("Applied Math")



Bold boxes are required for all option B students. Dashed arrows indicate that either course satisfies the pre-req. Be aware that a few arrows go behind other classes. Dashed boxes indicate sequence classes.
* Possible pre-req changes soon ^ STA 525 is the standard replacement for STA 321, which is not offered

Requirements:
☐ MA 113/114/213/214 Calc I-IV ☐ MA 320 Probability ☐ MA 321 Numerical Methods ☐ MA 322 Matrix Alg
☐ STA 525 Stats ☐ CS 115/215 Programming ☐ Upper-level sequence (415/340, 416/417, or 432/433)
☐ Additional 6 hrs of 300+ MA courses ☐ 9 hrs in supporting program (refer to official degree sheet for details)
☐ MA 391 (prereqs, one from each: 213 | 214 or 261 | 322 | 321, 351, 361, or 471 | 30+ completed credit hrs)

UK Graduate Classes



This represents primarily pure math courses. There are some MA/PHY courses regularly offered but not listed.
Some pre-reqs are also not shown.

Topics courses are offered on a somewhat random basis and are subtitled.

* 537 is offered both semesters

Undergrads are advised to not take any graduate courses until they have successfully completed all basic major courses and at least one semester of a sequence. Speaking to the professor is also a must.
Grad classes can be beneficial for upperclassmen but are not necessary, even for those intending on math grad school. Only take them if you really want to do it and feel prepared.

Math Minor

21 hours of Math Courses:

- ☐ MA 113 or MA 137, Calculus I
- ☐ MA 114 or MA 138, Calculus II
- ☐ MA 213, Calculus III
- ☐ MA 322, Matrix Algebra

- 6 additional hours of courses numbered 214 or higher.

  Possible choices: MA 214, MA 261, MA 320, MA 321, MA 330, MA 341, MA 351, MA 361, or any 400+ level course

To declare a minor, a student must visit the advising center of the college of their primary major.

Major Programs Related to Math

- Mathematical Economics
- Statistics
- Physics
- Engineering
- Computer Science
- Chemistry
- STEM Education

Many math majors are double (or even second degree) majors or have interesting minors.

Talk to your advisor about your interests!

Study Abroad

Various options exist for math majors to study abroad, e.g.

- Budapest Semester in Mathematics
- Budapest Semester in Mathematics Education
- UKY-City University of Hong Kong Program

Talk to your advisor about options, check out

http://www.uky.edu/international/students

University Scholars Program (USP): 4+1

- The USP offers students the opportunity of integrating their undergraduate and graduate courses of study in a single continuous program culminating in both a baccalaureate and a master's. The total number of hours for the combined program may be as many as 12 less than the total required for the separate degrees.
- Application to the program should be submitted at the end of the student's junior year. Applicants should have completed at least 90 credit hours of work toward the bachelor's degree, or be eligible for senior standing in the semester they are admitted to the program.
- The master's program should be in the field of the undergraduate major, and the undergraduate grade point average must be at least a 3.50 in the applicant's major field and 3.20 overall.
- Students submit the University Scholars Program form, GRE scores and an online application to the Graduate School in their junior year.
- Undergraduate tuition rates will be applied to the 12 hours (or less) of graduate level coursework designated for dual credit.

Integrated 4+1 Year BS/MS in Mathematics
Based on BS Option A

Fall	**Year 1**		**Spring**
UK Core CC1	3	UK Core CC2	3
Foreign Language 101	4	Foreign Language 102	4
UK Core QFO (MA 113/MA 193)	5	UK Core QFO (MA 114/MA 194)	5
UK Core HUM	3	CS 115	3
Total Credits	15	Total Credits	15
Fall	**Year 2**		**Spring**
Foreign Language 201	3	Foreign Language 202	3
UK Core NPM (PHY 231)	4	MA 261: Number Theory or MA 214: Calculus IV	3
UK Core NPM (PHY 241_	1	MA 322: Matrix Algebra	3
MA 213: Calculus III	4	A&S NS (PHY 232: General Physics)	4
UK Core SIR (STA 210)	3	A&S Lab (PHY: 242: Physics Lab II)	1
Total Credits	15	Total Credits	14
Fall	**Year 3**		**Spring**
MA 361 Abstract Algebra I	3	MA 362 Abstract Algebra II	3
MA 471G Advanced Calculus I	3	MA 472G Advanced Calculus II	3
CS 215: Introduction to program design, abstraction, and problem solving	4	UK Core GDY	3
UK Core ACR	3	MA 391 - GCCR	3
UK Core CCC	3	A&S SS (ECO 201: Principles of Economics)	3
Total Credits	16	Total Credits	15
Fall	**Year 4**		**Spring**
MA 565 Linear Algebra I	3	MA 614 Enumerative Combinatorics	3
MA 575 Principles of Analysis	3	MA 676 Real Analysis I	3
UK Core CCC	3	UK Core GDY	3
UK Core SSC	3	Elective	3
Elective	3	Elective	3
Total Credits	15	Total Credits	15
Fall	**Year 5**		**Spring**
MA 561 Abstract Algebra I	3	MA 661 Abstract Algebra II	3
MA 514 Combinatorial Structures	3	MA 671 Complex Analysis I	3
MA 551 Topology I	3	MA 651 Topology II	3
Total Credits	9	Total Credits	9

Degree Requirement Analysis

Math Club

- The UK Math Club is open to all undergraduate students with an interest in mathematics and serves as a focus of activities for our majors and a way to draw students to the major.
- The group holds several meetings each semester on topics such as an interesting piece of mathematics, information about summer internship or travel opportunities for mathematics students as well as career information.
- A list of recent activities is available from the website
  http://www.math.uky.edu/~mathclub/
  Each event will draw from 20 to 100 students.
- The Math Club enables undergraduate students to interact with faculty members and each other in an informal setting.

Math Competitions

- Several students at the University of Kentucky take part in regional and national mathematical competitions.
- This activity is challenging as well as satisfying, since it lets you test your intellectual power against problems whose solution needs original thought besides textbook routines.
- Typically, we participate in the **Virginia Tech competition** (October) and the **Putnam competition** (December).
- You may also find a collection of problems and other information on Professor Avinash Satahye's website:
  www.msc.uky.edu/sohum/putnam/index.htm
- If you would like to join, please send an email to Professor Xuancheng (Fernando) Shao:
  xuancheng.shao@uky.edu

The Math Lab at UK

- Since Spring 2018 Dr. Chris Manon is running the UK Math Lab (UKML) in order to provide a year-round venue for undergraduates to participate in mathematics research and outreach.
- On a typical semester there are a number of research projects dedicated to an unsolved mathematical problem and running under the direction of faculty members from the department.
- The Lab is also running visualization projects aimed at a broader non-mathematical audience.

- Lab members have a weekly commitment to research and visualization projects in exchange for course credit (MA 398 or MA 399) or, in special circumstances, a stipend.
- Each project nominally lasts the length of a summer or a semester, at the end of which project members give a seminar-style research talk on their work.
- This experience is typically a good introduction to research outside UK through summer REUs (as described next).

  UKML is part of a larger consortium called Geometry Labs United.

REU = Research Experience for Undergraduates

- REUs are summer programs typically lasting 6-9 weeks
- They take place all over the USA
- Specific research topics vary
- Typical stipend is $2,000 to $4,000, plus extra funds for food, travel, and lodging

Application Information

- Application deadlines range January-March
- You will write an essay or two when you apply
- You will usually need three letters of recommendation from math or science professors who know you reasonably well

Typical Course Prerequisites for REUs

- MA 113 [MA 137], MA 114 [MA 138], MA 213: Calculus I-III
- MA 322: Matrix Algebra

  [VERY IMPORTANT, take it as early as possible]
- CS 115: Computer Programming
- Experience in upper-division math courses. For example:
  MA 261 (Number Theory)
  MA 361 (Modern Algebra)
  MA 351 (Topology)
  MA 321 (Numerical Methods)
  MA 471G (Advanced Calculus)
  MA 416G (Optimization)

How do I find REUs?

- American Mathematical Society REU page
  http://www.ams.org/programs/students/undergrad/emp-reu
- MathPrograms.org
  http://www.mathprograms.org/

Scholarship/Awards Information

- The **Sally E. Pence Award** was established in 1963 by Dr. James C. Eaves, the Mathematics chair at the time. The award honors Dr. Sallie Pence, a UK faculty member interested in encouraging prospective teachers of mathematics, and provides recognition to Sophomore or Junior mathematics or secondary math education majors who have expressed their intention of becoming a teacher. Applicants for the award must have a overall standing of 3.0 and a standing in mathematics of 3.3. Application is in the Fall of the Sophomore or Junior year and selected applicants are presented the award at the annual Spring awards ceremony held at the Math House. Students may use the award to join the NCTM.
- The **Carolyn S. Bunyan Scholarship** was established in 1992 in memory of her brother C.G. Soward and in honor of her older brother, William C. Soward, her sister Mary A. Soward, and her two nieces, Ann Soward Vance and Erwinna Soward Wright. Mrs. Bunyan received a degree from the University of Wisconsin in 1925 and wanted to encourage outstanding mathematics majors to continue their studies. Application is in the Fall of the Sophomore or Junior year and the selected applicant is presented the award ($\approx \$1,500$) at the annual Spring awards ceremony held at the Math House.
- The **Robert B. Royster Memorial Award** is given to a graduating mathematics senior who is pursuing a career in teaching.
- The **J.C. Eaves Endowed Scholarship in Mathematics** was established in 2004 by J.C. Eaves and Mary G. Eaves in memory of Professor J.C. Eaves, former Mathematics chair and Professor at UK until 1967. The scholarship ($\approx \$2,500$) is intended for students who are graduates of any high school in the Commonwealth of Kentucky (with preference for qualified students from Muhlenberg, Taylor or Adair counties), who are Junior or Senior level Arts and Science students majoring in Mathematics and have at least a 3.0 GPA. Financial need may be a consideration in awarding this scholarship.
- The **J.C. Eaves Undergraduate Summer Research Award** provides a stipend ($\approx \$3,000$) for an undergraduate student to conduct research under a faculty supervisor. Summer research awards will be awarded on a competitive basis by the Undergraduate Committee. Students are asked to submit a research proposal and a supporting letter from their faculty mentor.
- The **J.C. Eaves Undergraduate Travel Award** provides support for (1) students who have the opportunity to travel to a national conference to present the results of their undergraduate research projects ($\approx \$500$) or (2) groups of students interested in attending conferences in Kentucky, such as the sectional meeting of the Math Association of America ($\approx \$100/\$200$) . Travel awards will be granted on a competitive basis by the Undergraduate Committee.

The J.C. Eaves Undergrad. Excellence Fund in Math

The J.C. Eaves Excellence Fund in Mathematics provides the Department with flexible, non-endowed funds to conduct a range of activities to enhance our program for undergraduate mathematics majors:

- **Math Club Activities**
- **J.C. Eaves Undergraduate Summer Research Awards**
- **J.C. Eaves Undergraduate Travel Awards**
- **J.C. Eaves Undergraduate Teaching Assistantships**

  provide our undergraduate students with a wider range of teaching opportunities in advanced Math courses. This will help to strengthen their understanding of the mathematics studied in these courses. By working closely with a faculty member, undergraduate assistants will strengthen their preparation as teachers which will be valuable for students heading to graduate school or to secondary school teaching. The typical undergraduate assistant will work 5 hours per week throughout a semester ($\approx \$1,000$) and may help with grading, conducting study sessions, or other activities as determined by the supervising instructor.
- **J.C. Eaves Speakers Series**

UK Office of Nationally Competitive Awards

Math majors often are good candidates for national awards and scholarships such as:

- Astronaut
- Goldwater
- Marshall
- Fulbright
- NSF Graduate Fellowships

This office can also assist with REU applications.

http://www.uky.edu/chellgren/competitive-awards

If interested, contact Pat Whitlow, Director: pat.whitlow@uky.edu

- **Astronaut Scholarship**
  2016-17 Corrine Elliott, Math & Chemistry
  2015-16 Robert Cass, Math
  2014-15 Matthew Fahrbach, CS & Math
  2013-14 Josiah Hanna, CS & Math

- **Goldwater Scholarship**

Award	2019 Tom Shelton, Physics & Math
	2017 Benjamin Riley, Physics & Math
	2016 Corrine Elliott, Math & Chemistry
	2014 Matthew Fahrbach, CS & Math
	2014 Samuel Saarinen, Math
	2013 Josiah Hanna, CS & Math
Hon. Mention	2018 Angela Wei, ABT & Math
	2015 Robert Cass, Math
	2015 Corrine Elliott, Math
	2012 Josiah Hanna, CS & Math

- **NSF Graduate Research Fellowship**

Award	2016 Robert Cass, Math
	2016 Matthew Fahrbach, CS & Math
	2016 Charles Fieseler, Physics & Math
	2015 Tamas Nagy, Chemistry & Math
	2014 Josiah Hanna, CS & Math

Job Opportunities For Math Majors

- Tutor at Mathskeller
- Undergraduate Assistant for the Math Department
- Math Excel Classroom Assistant
- Tutor at the Study (not Math Department)
- For requirements and to apply, go to https://ukjobs.uky.edu/ and search for student jobs in the Math Department.
- You can also inquire with Dr. Jonathan Clark, Director of the Mathskeller: jon.clark@uky.edu