

# MATHEMATICS - B.A.

## College of Arts and Sciences

Department of Mathematical Sciences  
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## Description

The Bachelor of Arts degree in Mathematics is a flexible program, grounded in the liberal arts and suited for students' individual interests and needs. The program combines well with a second major and/or minors.

## Fully Offered At:

- Kent Campus
- Stark Campus

## Admission Requirements

The university affirmatively strives to provide educational opportunities and access to students with varied backgrounds, those with special talents and adult students who graduated from high school three or more years ago.

**Freshman Students on the Kent Campus:** The freshman admission policy on the Kent Campus is selective. Admission decisions are based upon the following: cumulative grade point average, ACT and/or SAT scores, strength of high school college preparatory curriculum and grade trends. The Admissions Office at the Kent Campus may defer the admission of students who do not meet admissions criteria but who demonstrate areas of promise for successful college study. Deferred applicants may begin their college coursework at one of seven regional campuses of Kent State University. For more information on admissions, including additional requirements for some academic programs, visit the admissions website for new freshmen.

**Freshman Students on the Regional Campuses:** Kent State campuses at Ashtabula, East Liverpool, Geauga, Salem, Stark, Trumbull and Tuscarawas, as well as the Regional Academic Center in Twinsburg, have open enrollment admission for students who hold a high school diploma, GED or equivalent.

**English Language Proficiency Requirements for International Students:** All international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning a minimum 525 TOEFL score (71 on the Internet-based version), minimum 75 MELAB score, minimum 6.0 IELTS score or minimum 48 PTE score, or by completing the ESL level 112 Intensive Program. For more information on international admission, visit the Office of Global Education's admission website.

**Transfer, Transitioning and Former Students:** For more information about admission criteria for transfer, transitioning and former students, please visit the admissions website.

## University Requirements

All students in a bachelor's degree program at Kent State University must complete the following university requirements for graduation.

**NOTE:** University requirements may be fulfilled in this program by specific course requirements. Please see Program Requirements for details.

Destination Kent State: First Year Experience	1
Course is not required for students with 25 transfer credits, excluding College Credit Plus, or age 21+ at time of admission.	
Diversity Domestic/Global (DIVD/DIVG)	2 courses
Students must successfully complete one domestic and one global course, of which one must be from the Kent Core.	
Experiential Learning Requirement (ELR)	varies
Students must successfully complete one course or approved experience.	
Kent Core (see table below)	36-37
Writing-Intensive Course (WIC)	1 course
Students must earn a minimum C grade in the course.	
Upper-Division Requirement	39 (or 42)
Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate. Students in a B.A. and/or B.S. degree in the College of Arts and Sciences must complete 42 upper-division credit hours.	
Total Credit Hour Requirement	120
Some bachelor's degrees require students to complete more than 120 credit hours.	

## Kent Core Requirements

Kent Core Composition (KCMP)	6
Kent Core Mathematics and Critical Reasoning (KMCR)	3
Kent Core Humanities and Fine Arts (KHUM/KFA) (min one course each)	9
Kent Core Social Sciences (KSS) (must be from two disciplines)	6
Kent Core Basic Sciences (KBS/KLAB) (must include one laboratory)	6-7
Kent Core Additional (KADL)	6
<b>Total Credit Hours:</b>	<b>36-37</b>

## Program Requirements

### Major Requirements

Code	Title	Credit Hours
<b>Major Requirements (courses count in major GPA) <sup>1</sup></b>		
MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR) (min C grade)	5
MATH 12003	ANALYTIC GEOMETRY AND CALCULUS II (min C grade)	5
MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
MATH 21001	LINEAR ALGEBRA (min C grade)	3
MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III (min C grade)	4
MATH 31011	PROOFS IN DISCRETE MATHEMATICS	3
MATH 41001	MODERN ALGEBRA I (ELR) (WIC) <sup>2</sup>	3
or MATH 42001	ANALYSIS I (ELR) (WIC)	
MATH 41002	MODERN ALGEBRA II (ELR) (WIC) <sup>2</sup>	3
or MATH 42002	ANALYSIS II (ELR) (WIC)	

Mathematics Electives, choose from the following:	9
MATH 30055 MATHEMATICAL THEORY OF INTEREST	
MATH 32044 ORDINARY DIFFERENTIAL EQUATIONS	
MATH 38001 HANDS-ON MATHEMATICS	
MATH 40011 PROBABILITY THEORY AND APPLICATIONS	
MATH 40012 THEORY OF STATISTICS	
MATH 40015 APPLIED STATISTICS	
MATH 40024 COMPUTATIONAL STATISTICS	
MATH 40028 STATISTICAL LEARNING	
MATH 40055 ACTUARIAL MATHEMATICS I (ELR) (WIC) <sup>2</sup>	
MATH 40056 ACTUARIAL MATHEMATICS II	
MATH 41001 MODERN ALGEBRA I (ELR) (WIC) <sup>2</sup>	
MATH 41002 MODERN ALGEBRA II (ELR) (WIC) <sup>2</sup>	
MATH 42001 ANALYSIS I (ELR) (WIC) <sup>2</sup>	
MATH 42002 ANALYSIS II (ELR) (WIC) <sup>2</sup>	
MATH 42021 GRAPH THEORY AND COMBINATORICS	
MATH 42031 MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS	
MATH 42039 MODELING PROJECTS (ELR) (WIC) <sup>2</sup>	
MATH 42024 NUMBERS AND GAMES	
MATH 42041 ADVANCED CALCULUS	
MATH 42045 PARTIAL DIFFERENTIAL EQUATIONS	
MATH 42048 COMPLEX VARIABLES	
MATH 42201 NUMERICAL COMPUTING I	
MATH 42202 NUMERICAL COMPUTING II	
MATH 45011 DIFFERENTIAL GEOMETRY	
MATH 45021 EUCLIDEAN GEOMETRY	
MATH 45022 LINEAR GEOMETRY	
MATH 46001 ELEMENTARY TOPOLOGY	
MATH 47011 THEORY OF NUMBERS	
MATH 47021 HISTORY OF MATHEMATICS	
Computer Programming Elective, choose from the following:	3-4
CS 10051 INTRODUCTION TO COMPUTER SCIENCE (KMCR)	
CS 10062 PROGRAMMING FOR PROBLEM SOLVING IN SCIENCES	
CS 13001 COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING	
CS 13011 & CS 13012 COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING and COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING (min C grade in both courses)	
DSCI 15310 COMPUTATIONAL THINKING AND PROGRAMMING	
<b>Additional Requirements (courses do not count in major GPA)</b>	
UC 10097 DESTINATION KENT STATE: FIRST YEAR EXPERIENCE	1
Foreign Language (see Foreign Language College Requirement below)	14-16
Kent Core Composition	6
Kent Core Humanities and Fine Arts (minimum one course from each)	9
Kent Core Social Sciences (must be from two disciplines)	6
Kent Core Basic Sciences (must include one laboratory)	6
Kent Core Additional	6
College General Requirement (must be from Kent Core Basic Sciences)	3
College General Requirement (must be from Kent Core Social Sciences) <sup>4</sup>	3

General Electives (total credit hours depends on earning 120 credit hours, including 42 upper-division credit hours)	25
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Minimum Total Credit Hours:	120
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- <sup>1</sup> MATH 30011, MATH 34001 and MATH 34002 may not be applied to the major requirements.
- <sup>2</sup> A minimum C grade must be earned to fulfill the writing-intensive requirement.
- <sup>3</sup> One additional course taken from the Kent Core Basic Sciences in the following Arts and Sciences disciplines: Anthropology (ANTH), Biological Sciences (BSCI), Chemistry (CHEM), Geography (GEOG), Geology (GEOL) or Physics (PHY). The course may not be from the student's major.
- <sup>4</sup> One additional course taken from the Kent Core Social Sciences courses in the following Arts and Sciences disciplines: Anthropology (ANTH), Geography (GEOG), Criminology and Justice Studies (CRIM), Peace and Conflict Studies (PACS), Political Science (POL), Psychology (PSYC) or Sociology (SOC). The course may not be from the student's major.

## Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
2.000	2.000

## Foreign Language College Requirement

Students pursuing the Bachelor of Arts degree in the College of Arts and Sciences must complete 14-16 credit hours of foreign language.<sup>1</sup>

To complete the requirement, students have the equivalent of Elementary I and II in any language, plus one of the following options:

- Intermediate I and II of the same language <sup>2</sup>
  - Elementary I and II of a second language
  - Any combination of two courses from the following list:
    - Intermediate I of the same language
    - MCLS 10001 INTRODUCTION TO STRUCTURAL CONCEPTS FOR LANGUAGE STUDENTS
    - MCLS 20091 VARIABLE CONTENT SEMINAR IN GLOBAL LITERACY: CASE STUDIES
    - MCLS 21417 MULTICULTURALISM IN TODAY'S GERMANY (DIVG)
    - MCLS 28404 THE LATIN AMERICAN EXPERIENCE (DIVG)
- <sup>1</sup> All students with prior foreign language experience should take the foreign language placement test to determine the appropriate level at which to start. Some students may begin beyond the Elementary I level and will complete the requirement with fewer credit hours and fewer courses. This may be accomplished by (1) passing a course beyond Elementary I through Intermediate II level; (2) receiving credit through Credit by Exam (CBE), Advanced Placement (AP), International Baccalaureate (IB) or College Level Examination Program (CLEP); or (3) being designated a "native speaker" of a non-English language (consult with the College of Arts and Sciences Advising Office for additional information). When students complete the requirement with fewer than 14 credit hours and four courses, they will complete remaining credit hours with general electives.

<sup>2</sup> Certain majors, concentrations and minors may require specific languages, limit the languages from which a student may choose or require coursework through Intermediate II. Students who plan to pursue graduate study may need particular language coursework.

## Roadmap

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

<b>Semester One</b>		<b>Credits</b>
MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
UC 10097	DESTINATION KENT STATE: FIRST YEAR EXPERIENCE	1
Computer Programming Elective		3
Foreign Language		4
Kent Core Requirement		3
Credit Hours		16
<b>Semester Two</b>		
MATH 12003	ANALYTIC GEOMETRY AND CALCULUS II	5
Kent Core Requirement		3
Kent Core Requirement		3
Foreign Language		4
Credit Hours		15
<b>Semester Three</b>		
MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III	4
Kent Core Requirement		3
Kent Core Requirement		3
Foreign Language		3
General Elective		3
Credit Hours		16
<b>Semester Four</b>		
MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
Foreign Language		3
Kent Core Requirement		3
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		15
<b>Semester Five</b>		
MATH 21001	LINEAR ALGEBRA	3
MATH 31011	PROOFS IN DISCRETE MATHEMATICS	3
College General Requirement		3
College General Requirement		3
Kent Core Requirement		3
Credit Hours		15
<b>Semester Six</b>		
Mathematics Electives		3
Kent Core Requirement		3
Kent Core Requirement		3
General Elective		6
Credit Hours		15
<b>Semester Seven</b>		
MATH 41001	MODERN ALGEBRA I (ELR) (WIC) or or ANALYSIS I (ELR) (WIC)	3
MATH 42001		
Mathematics Electives		3
General Electives		9
Credit Hours		15
<b>Semester Eight</b>		
MATH 41002	MODERN ALGEBRA II (ELR) (WIC) or or ANALYSIS II (ELR) (WIC)	3
MATH 42002		

Mathematics Electives	3
General Electives	7
Credit Hours	13
Minimum Total Credit Hours:	120