MATHEMATICS - B.S.

College of Arts and Sciences
Department of Mathematical Sciences
www.kent.edu/math

About This Program
Gain a deep understanding of mathematical concepts and their practical applications, while learning from experienced faculty and utilizing state-of-the-art facilities. With a Mathematics B.S. degree from Kent State, you'll be equipped with the skills needed to pursue a variety of careers in fields such as finance, education, research and more. Read more...

Contact Information
• Program Coordinator: Xiaoyu Zheng | xzheng3@kent.edu | 330-672-9089
• Speak with an Advisor
  • Kent Campus
  • Stark Campus
• Chat with an Admissions Counselor: Kent Campus | Regional Campuses

Program Delivery
• Delivery:
  • In person
• Location:
  • Kent Campus
  • Stark Campus

Examples of Possible Careers and Salaries*
Mathematical science teachers, postsecondary
• 1.3% slower than the average
• 60,100 number of jobs
• $73,650 potential earnings

Mathematicians
• 3.0% about as fast as the average
• 2,900 number of jobs
• $110,860 potential earnings

Natural sciences managers
• 4.8% about as fast as the average
• 71,400 number of jobs
• $137,940 potential earnings

Secondary school teachers, except special and career/technical education
• 3.8% about as fast as the average
• 1,050,800 number of jobs
• $62,870 potential earnings

* Source of occupation titles and labor data comes from the U.S. Bureau of Labor Statistics’ Occupational Outlook Handbook. Data comprises projected percent change in employment over the next 10 years; nation-wide employment numbers; and the yearly median wage at which half of the workers in the occupation earned more than that amount and half earned less.

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.

First-Year Students on the Kent Campus: First-year admission policy on the Kent Campus is selective. Admission decisions are based upon cumulative grade point average, strength of high school college preparatory curriculum and grade trends. Students not admissible to the Kent Campus may be administratively referred to one of the seven regional campuses to begin their college coursework. For more information, visit the admissions website for first-year students.

First-Year Students on the Regional Campuses: First-year admission to Kent State’s campuses at Ashtabula, East Liverpool, Geauga, Salem, Stark, Trumbull and Tuscarawas, as well as the Twinsburg Academic Center, is open to anyone with a high school diploma or its equivalent. For more information on admissions, contact the Regional Campuses admissions offices.

International Students: All international students must provide proof of English language proficiency unless they meet specific exceptions. For more information, visit the admissions website for international students.

Transfer Students: Students who have attended any other educational institution after graduating from high school must apply as undergraduate transfer students. For more information, visit the admissions website for transfer students.

Former Students: Former Kent State students or graduates who have not attended another college or university since Kent State may complete the reenrollment or reinstatement form on the University Registrar’s website.

Admission policies for undergraduate students may be found in the University Catalog. Some programs may require that students meet certain requirements before progressing through the program. For programs with progression requirements, the information is shown on the Coursework tab.

Program Requirements

Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MATH 12002</td>
<td>ANALYTIC GEOMETRY AND CALCULUS I (KMCR) (min C grade)</td>
<td>5</td>
</tr>
<tr>
<td>MATH 12003</td>
<td>ANALYTIC GEOMETRY AND CALCULUS II (min C grade)</td>
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<tr>
<td>MATH 20011</td>
<td>DECISION-MAKING UNDER UNCERTAINTY</td>
<td>3</td>
</tr>
<tr>
<td>MATH 21001</td>
<td>LINEAR ALGEBRA (min C grade)</td>
<td>3</td>
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<tr>
<td>MATH 22005</td>
<td>ANALYTIC GEOMETRY AND CALCULUS III (min C grade)</td>
<td>4</td>
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<tr>
<td>MATH 31011</td>
<td>PROOFS IN DISCRETE MATHEMATICS (min C grade)</td>
<td>3</td>
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</table>
Mathematics - B.S.

Applied Mathematics Sequence, choose from the following:

- MATH 32044 ORDINARY DIFFERENTIAL EQUATIONS 3
- MATH 41001 MODERN ALGEBRA I (ELR) (WIC) (min C grade) 3
- MATH 41002 MODERN ALGEBRA II (ELR) (WIC) 3
- MATH 41021 THEORY OF MATRICES 3
- MATH 42001 ANALYSIS I (ELR) (WIC) (min C grade) 3
- MATH 42002 ANALYSIS II (ELR) (WIC) 3

Computer Science Elective(s), choose from the following:

- CS 10062 PROGRAMMING FOR PROBLEM SOLVING IN SCIENCES 4
- CS 13001 COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING 9
- CS 13011 & CS 13012 COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING and COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING 3

Pure Mathematics Electives, choose from the following:

- MATH 40028 PROBABILITY THEORY AND APPLICATIONS 6
- MATH 40012 THEOREY OF STATISTICS (WIC) 2
- MATH 40005 ACTUARIAL MATHEMATICS I (ELR) (WIC) 2
- MATH 40012 ACTUARIAL MATHEMATICS II (ELR) (WIC) 2
- MATH 42031 MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS and MODELING PROJECTS (ELR) (WIC) 2

Applied Mathematics Sequence, choose from the following:

- MATH 40011 PROBABILITY THEORY AND APPLICATIONS and THEOREY OF STATISTICS (WIC) 2
- MATH 40055 ACTUARIAL MATHEMATICS I (ELR) (WIC) and ACTUARIAL MATHEMATICS II (ELR) (WIC) 2
- MATH 42031 MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS and MODELING PROJECTS (ELR) (WIC) 2

Allied Area Electives, choose from the following:

- BSCI 30050 HUMAN GENETICS 3
- BSCI 40020 BIOLOGY OF AGING 6
- CHEM 30050 INTRODUCTION TO MATERIALS CHEMISTRY 8
- CHEM 30105 ANALYTICAL CHEMISTRY I 6
- CHEM 30106 ANALYTICAL CHEMISTRY II 6
- CHEM 30301 INORGANIC CHEMISTRY I 6
- CHEM 40302 INORGANIC CHEMISTRY II 6
- CHEM 40303 INORGANIC CHEMISTRY III 6
- CHEM 40555 PHYSICAL CHEMISTRY I 6
- CHEM 40556 PHYSICAL CHEMISTRY II 6
- CHEM 40559 NANOBACK 6

For the complete list of courses, please refer to the Kent State University Catalog 2023-2024.
Minimum Total Credit Hours: 120

A course may count toward only one requirement even though it may appear in more than one course list.

Graduation Requirements

Minimum Major GPA | Minimum Overall GPA
--- | ---
2.000 | 2.000

Foreign Language College Requirement, B.S.

- Students pursuing the Bachelor of Science degree in the College of Arts and Sciences must complete 8 credit hours of foreign language.1
- The Bachelor of Science in Medical Laboratory Science is exempt from this requirement.2
- Minimum Elementary I and II of the same language

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 start 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 one of the alternative credit programs offered by Kent State University; or (3) demonstrating language proficiency comparable to Elementary II of a foreign language. When students complete the requirement with fewer than 8 credit hours and two courses, they will complete remaining credit hours with general electives.

2 The Bachelor of Science in Medical Laboratory Science exemption exists under another college policy (Three-Plus-One Programs).

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.

<table>
<thead>
<tr>
<th>Semester One</th>
<th>Credit Hours</th>
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<tr>
<td>! MATH 12002</td>
<td>ANALYTIC GEOMETRY AND CALCULUS I (KMCR)</td>
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<td>UC 10001</td>
<td>FLASHES 101</td>
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<td>! Computer Science Elective(s)</td>
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<tr>
<td>Foreign Language</td>
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<td>Kent Core Requirement</td>
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<tr>
<td>! MATH 12003</td>
<td>ANALYTIC GEOMETRY AND CALCULUS II</td>
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<td>MATH 20011</td>
<td>DECISION-MAKING UNDER UNCERTAINTY</td>
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<td>! PHY 23101</td>
<td>GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)</td>
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<tr>
<td>Foreign Language</td>
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<td><strong>Total</strong></td>
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<th>Semester Three</th>
<th>Credit Hours</th>
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<tr>
<td>! MATH 21001</td>
<td>LINEAR ALGEBRA</td>
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<tr>
<td>! MATH 22005</td>
<td>ANALYTIC GEOMETRY AND CALCULUS III</td>
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<td>MATH 31011</td>
<td>PROOFS IN DISCRETE MATHEMATICS</td>
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<td>Kent Core Requirement</td>
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<td>Kent Core Requirement</td>
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<td><strong>Total</strong></td>
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<table>
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<th>Semester Four</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MATH 32044</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS</td>
</tr>
<tr>
<td>! MATH 41021</td>
<td>THEORY OF MATRICES</td>
</tr>
</tbody>
</table>
Kent Core Requirement
Kent Core Requirement
Kent Core Requirement

Credit Hours 15

Semester Five
! MATH 41001 MODERN ALGEBRA I (ELR) (WIC) 3
Allied Area Elective 3
Pure Mathematics Elective 3
Kent Core Requirement 3
Kent Core Requirement 3

Credit Hours 15

Semester Six
! MATH 41002 MODERN ALGEBRA II (ELR) (WIC) 3
Pure Mathematics Elective 3
Kent Core Requirement 3
Kent Core Requirement 1
General Elective 3

Credit Hours 13

Semester Seven
! MATH 42001 ANALYSIS I (ELR) (WIC) 3
Allied Area Elective 3
Applied Mathematics Sequence 3
General Electives 6

Credit Hours 15

Semester Eight
! MATH 42002 ANALYSIS II (ELR) (WIC) 3
Applied Mathematics Sequence 3
Pure Mathematics Elective 3
General Elective 3

Credit Hours 12

Minimum Total Credit Hours: 120

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

Total Credit Hours: 36-37

Program Learning Outcomes
Graduates of this program will be able to:
1. Reason in mathematical arguments at a level appropriate to the discipline, including using precise definitions, articulating assumptions and reasoning logically to conclusions.
2. Engage effectively in problem solving, including exploring examples, devising and testing conjectures and assessing the correctness of solutions.
3. Approach mathematical problems creatively, including trying multiple approaches and modifying problems when necessary to make them more tractable.
4. Communicate mathematics clearly both orally and in writing.
5. Understand and appreciate connections among different subdisciplines of mathematics.
6. Understand and appreciate connections between mathematics and other disciplines.
7. Be aware of and understand a broad range of mathematical subdisciplines.

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.

Flashes 101 (UC 10001) 1 credit hour
Course is not required for students with 30+ 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 credit hours

Writing-Intensive Course (WIC) 1 course
Students must earn a minimum C grade in the course.

Upper-Division Requirement 39 credit hours
Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate.

Total Credit Hour Requirement 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

Total Credit Hours: 36-37

Full Description
The Bachelor of Science degree in Mathematics comprises core areas in algebra (number systems, equations, discrete structures), analysis (functions, limits, continuous processes), geometry (space, shape, form) and associated generalizations and abstractions.

The B.S. degree program is recommended for students interested in a flexible option of careers or graduate study in mathematics. Coupled with the Education minor, the program can lead to Ohio teacher licensure.

Students may apply early to the M.S.in Pure Mathematics program and double count 9 credit hours of graduate courses toward both degree programs. See the Combined Bachelor's/Master's Degree Program policy in the University Catalog for more information.