

MATHEMATICS - B.S.

College of Arts and Sciences

Department of Mathematical Sciences
 233 Mathematics and Computer Science Building
 Kent Campus
 330-672-2430
 math@math.kent.edu
 www.kent.edu/math

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.

The Mathematics major includes the following optional concentration:

- The **Actuarial Mathematics** optional concentration prepares students for the actuarial profession, the discipline that applies mathematical and statistical methods to assess risk in the insurance and finance industries.

Fully Offered At:

- Kent Campus
- Stark Campus (not Actuarial Mathematics concentration)

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.

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.

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|---|------------|
| 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

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|------------------------------|---|
| Kent Core Composition (KCMP) | 6 |
|------------------------------|---|

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|---|--------------|
| 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 Requirements

Major Requirements

| Code | Title | Credit Hours |
|---|--|--------------|
| Major Requirements (courses count in major GPA)¹ | | |
| MATH 12002 | ANALYTIC GEOMETRY AND CALCULUS I (KMCR) (min C grade) | 5 |
| MATH 12003 | ANALYTIC GEOMETRY AND CALCULUS II (min C grade) | 5 |
| MATH 21001 | LINEAR ALGEBRA WITH APPLICATIONS (min C grade) | 3 |
| MATH 22005 | ANALYTIC GEOMETRY AND CALCULUS III (min C grade) | 4 |
| MATH 20011 | DECISION-MAKING UNDER UNCERTAINTY | 3 |
| MATH 31011 | PROOFS IN DISCRETE MATHEMATICS (min C grade) | 3 |
| MATH 32044 | ORDINARY DIFFERENTIAL EQUATIONS | 3 |
| Computer Science Elective, choose from the following: 4 | | |
| 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 | |
| Additional Requirements (courses do not count in major GPA) | | |
| UC 10097 | DESTINATION KENT STATE: FIRST YEAR EXPERIENCE | 1 |
| Foreign Language (see Foreign Language College Requirement below) 8 | | |
| 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) 3 | | |
| Kent Core Additional 3 | | |
| General Electives (total credit hours depends on earning 120 credit hours, including 42 upper-division credit hours) 10 | | |
| Additional Requirements or Concentration | | |
| Choose from the following: 50 | | |
| Additional Requirements for Students Not Declaring a Concentration | | |
| Actuarial Mathematics Concentration | | |
| Minimum Total Credit Hours: 120 | | |

¹ MATH 30011, MATH 34001 and MATH 34002 may not be applied to the major requirements

Additional Requirements for Students Not Declaring a Concentration

[BS-MATH]

| Code | Title | Credit Hours |
|--|--|--------------|
| Major Requirements (courses count in major GPA) | | |
| MATH 41001 | MODERN ALGEBRA I (ELR) (WIC) ¹ | 3 |
| MATH 41002 | MODERN ALGEBRA II (ELR) (WIC) ¹ | 3 |
| MATH 41021 | THEORY OF MATRICES (min C grade) | 3 |
| MATH 42001 | ANALYSIS I (ELR) (WIC) ¹ | 3 |
| MATH 42002 | ANALYSIS II (ELR) (WIC) ¹ | 3 |
| PHY 23101 | GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB) | 5 |
| Pure Mathematics Electives, choose from the following: 9 | | |
| MATH 42021 | GRAPH THEORY AND COMBINATORICS | |
| MATH 42048 | COMPLEX VARIABLES | |
| MATH 45011 | DIFFERENTIAL GEOMETRY | |
| MATH 45021 | EUCLIDEAN GEOMETRY | |
| MATH 45022 | LINEAR GEOMETRY | |
| MATH 46001 | ELEMENTARY TOPOLOGY | |
| MATH 47011 | THEORY OF NUMBERS | |
| Applied Mathematics Sequence, choose from the following: 6-8 | | |
| MATH 40011 & MATH 40012 | PROBABILITY THEORY AND APPLICATIONS and THEORY OF STATISTICS | |
| MATH 40055 & MATH 40056 | ACTUARIAL MATHEMATICS I (ELR) (WIC) and ACTUARIAL MATHEMATICS II | |
| MATH 42031 & MATH 42039 | MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS and MODELING PROJECTS (ELR) (WIC) ¹ | |
| MATH 42041 & MATH 42045 | ADVANCED CALCULUS and PARTIAL DIFFERENTIAL EQUATIONS | |
| MATH 42201 & MATH 42202 | NUMERICAL COMPUTING I and NUMERICAL COMPUTING II | |
| Allied Area Electives, choose from the following: ² 6 | | |
| BSCI 30050 | HUMAN GENETICS | |
| BSCI 40020 | BIOLOGY OF AGING | |
| CHEM 30050 | INTRODUCTION TO MATERIALS CHEMISTRY | |
| CHEM 30105 | ANALYTICAL CHEMISTRY I | |
| CHEM 30106 | ANALYTICAL CHEMISTRY II | |
| CHEM 30301 | INORGANIC CHEMISTRY I | |
| CHEM 40302 | INORGANIC CHEMISTRY II | |
| CHEM 40303 | INORGANIC CHEMISTRY III | |
| CHEM 40555 | PHYSICAL CHEMISTRY I | |
| CHEM 40556 | PHYSICAL CHEMISTRY II | |
| CHEM 40559 | NANOMATERIALS | |
| CS 33007 | INTRODUCTION TO DATABASE SYSTEM DESIGN | |
| CS 33101 | STRUCTURE OF PROGRAMMING LANGUAGES | |
| CS 33211 | OPERATING SYSTEMS | |
| CS 33901 | SOFTWARE ENGINEERING | |
| CS 35101 | COMPUTER ARCHITECTURE | |
| CS 35201 | COMPUTER COMMUNICATION NETWORKS | |
| CS 38101 | INTRODUCTION TO GAME PROGRAMMING | |
| CS 43006 | THEORY OF OBJECT-ORIENTED PROGRAMMING | |
| CS 43111 | STRUCTURE OF COMPILERS | |
| CS 43202 | SYSTEMS ADMINISTRATION | |
| CS 43203 | SYSTEMS PROGRAMMING | |
| CS 43301 | SOFTWARE DEVELOPMENT FOR ROBOTICS | |
| CS 43305 | ADVANCED DIGITAL DESIGN | |
| CS 43401 | SECURE PROGRAMMING | |

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| CS 44001 | COMPUTER SCIENCE III-PROGRAMMING PATTERNS |
| CS 44003 | MOBILE APPS IN IOS PROGRAMMING |
| CS 44105 | WEB PROGRAMMING I |
| CS 44106 | WEB PROGRAMMING II |
| CS 44201 | ARTIFICIAL INTELLIGENCE |
| CS 45203 | COMPUTER NETWORK SECURITY |
| CS 45231 | INTERNET ENGINEERING |
| CS 46101 | DESIGN AND ANALYSIS OF ALGORITHMS |
| CS 47101 | COMPUTER GRAPHICS |
| CS 47205 | INFORMATION SECURITY |
| CS 47206 | DATA SECURITY AND PRIVACY |
| CS 47207 | DIGITAL FORENSICS |
| CS 47221 | INTRODUCTION TO CRYPTOLOGY |
| CS 48101 | GAME ENGINE CONCEPTS |
| GEOG 31062 | FUNDAMENTALS OF METEOROLOGY |
| GEOG 31064 | PRINCIPLES OF CLIMATOLOGY |
| GEOG 35065 | GEOGRAPHY OF TRANSPORTATION AND SPATIAL INTERACTION |
| GEOG 39002 | STATISTICAL METHODS IN GEOGRAPHY |
| GEOG 41065 | APPLIED CLIMATOLOGY |
| GEOG 44070 | SPATIAL ANALYSIS AND LOCATION THEORY |
| GEOG 49070 | GEOGRAPHIC INFORMATION SCIENCE |
| GEOG 49080 | ADVANCED GEOGRAPHIC INFORMATION SCIENCE |
| GEOG 49085 | WEB AND MOBILE GEOGRAPHIC INFORMATION SCIENCE |
| GEOG 49162 | CARTOGRAPHY AND GEOVISUALIZATION |
| GEOG 49163 | CARTOGRAPHY AND GEOVISUALIZATION LABORATORY |
| GEOG 49230 | REMOTE SENSING |
| GEOL 31080 | STRUCTURAL GEOLOGY |
| GEOL 32066 | GEOMORPHOLOGY |
| GEOL 41025 | GENERAL GEOPHYSICS |
| GEOL 41080 | TECTONICS AND OROGENY |
| GEOL 42030 | REMOTE SENSING |
| GEOL 42035 | SCIENTIFIC METHODS IN GEOLOGY |
| ECON 32040 | INTERMEDIATE MICROECONOMIC THEORY AND APPLICATIONS |
| ECON 32041 | INTERMEDIATE MACROECONOMIC THEORY AND POLICY |
| ECON 32050 | APPLIED ECONOMETRICS I (ELR) |
| ECON 32051 | APPLIED ECONOMETRICS II |
| ECON 42050 | DATA ACQUISITION, PREPARATION AND VISUALIZATION |
| ECON 42070 | GAME THEORY |
| MATH 30055 | MATHEMATICAL THEORY OF INTEREST |
| 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) ¹ |
| MATH 40056 | ACTUARIAL MATHEMATICS II |
| MATH 42021 | GRAPH THEORY AND COMBINATORICS |
| MATH 42024 | NUMBERS AND GAMES |

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| MATH 42031 | MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS |
| MATH 42039 | MODELING PROJECTS (ELR) (WIC) ¹ |
| 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 |
| PHIL 41035 | PHILOSOPHY OF SCIENCE |
| PHIL 41038 | INTERMEDIATE LOGIC |
| PHIL 41045 | METALOGIC |
| PHY 34000 | COSMOLOGY |
| PHY 35101 | CLASSICAL MECHANICS |
| PHY 36001 | INTRODUCTORY MODERN PHYSICS |
| PHY 36002 | APPLICATIONS OF MODERN PHYSICS |
| PHY 44802 | ASTROPHYSICS |
| PHY 45201 | ELECTROMAGNETIC THEORY |
| PHY 45301 | THERMAL PHYSICS |
| PHY 45401 | MATHEMATICAL METHODS IN PHYSICS |
| PHY 45403 | DATA ANALYSIS AND COMPUTATIONAL PHYSICS TECHNIQUES |
| PHY 45501 | ELECTROMAGNETIC WAVES AND MODERN OPTICS |
| PHY 46101 | QUANTUM MECHANICS |
| PHY 46301 | INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS |
| PHY 46401 | INTRODUCTION TO SOLID STATE PHYSICS |

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| Additional Requirements (courses do not count in major GPA) | |
| Kent Core Social Sciences (must be from two disciplines) | 3 |
| Kent Core Basic Sciences | 1 |
| Kent Core Additional | 3 |
| Minimum Total Credit Hours: | 50 |

- ¹ A minimum C grade must be earned to fulfill the writing-intensive course requirement.
- ² A course may only count in one requirement even though it may appear in more than one.

Actuarial Mathematics Concentration Requirements

[BS-MATH-AMAT]

| Code | Title | Credit Hours |
|--|---|--------------|
| Major Requirements (courses count in major GPA) | | |
| ACCT 23020 | INTRODUCTION TO FINANCIAL ACCOUNTING | 3 |
| ECON 22060 | PRINCIPLES OF MICROECONOMICS (KSS) ¹ | 3 |
| ECON 22061 | PRINCIPLES OF MACROECONOMICS (KSS) ¹ | 3 |
| ECON 32050 | APPLIED ECONOMETRICS I (ELR) ¹ | 3 |
| FIN 36053 | BUSINESS FINANCE | 3 |
| MATH 30055 | MATHEMATICAL THEORY OF INTEREST | 3 |
| MATH 40011 | PROBABILITY THEORY AND APPLICATIONS | 3 |
| MATH 40012 | THEORY OF STATISTICS | 3 |

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| GEOL 41080 | TECTONICS AND OROGENY |
| GEOL 42030 | REMOTE SENSING |
| GEOL 42035 | SCIENTIFIC METHODS IN GEOLOGY |
| MATH 40015 | APPLIED STATISTICS |
| MATH 40024 | COMPUTATIONAL STATISTICS |
| MATH 40028 | STATISTICAL LEARNING |
| MATH 40051 | TOPICS IN PROBABILITY THEORY AND STOCHASTIC PROCESSES |
| MATH 41001 | MODERN ALGEBRA I (ELR) (WIC) ² |
| MATH 41002 | MODERN ALGEBRA II (ELR) (WIC) ² |
| MATH 41021 | THEORY OF MATRICES |
| MATH 42001 | ANALYSIS I (ELR) (WIC) |
| MATH 42002 | ANALYSIS II (ELR) (WIC) |
| MATH 42021 | GRAPH THEORY AND COMBINATORICS |
| MATH 42031 | MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS |
| MATH 42039 | MODELING PROJECTS (ELR) (WIC) ² |
| 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 |
| MIS 34032 | DATA AND FILE TECHNOLOGY |
| MIS 34053 | DATA INTEGRATION |
| MIS 34060 | OPERATIONS MANAGEMENT |
| MIS 34068 | SYSTEMS ANALYSIS AND DESIGN |
| MIS 34070 | PROGRAMMING THEORY AND APPLICATIONS |
| MIS 34080 | COMPUTER PROGRAMMING FOR BUSINESS I |
| MIS 44033 | ADVANCED COMPUTER PROGRAMMING FOR BUSINESS |
| MIS 44043 | DATABASE MANAGEMENT SYSTEMS |
| MIS 44044 | SYSTEMS ANALYSIS II |
| MIS 44045 | INFORMATION SYSTEMS MANAGEMENT |
| MIS 44048 | SOFTWARE INTEGRATION (ELR) (WIC) ² |
| PHIL 41035 | PHILOSOPHY OF SCIENCE |
| PHIL 41038 | INTERMEDIATE LOGIC |
| PHIL 41045 | METALOGIC |
| PHY 34000 | COSMOLOGY |
| PHY 35101 | CLASSICAL MECHANICS |
| PHY 36001 | INTRODUCTORY MODERN PHYSICS |
| PHY 36002 | APPLICATIONS OF MODERN PHYSICS |
| PHY 44802 | ASTROPHYSICS |
| PHY 45201 | ELECTROMAGNETIC THEORY |
| PHY 45301 | THERMAL PHYSICS |
| PHY 45401 | MATHEMATICAL METHODS IN PHYSICS |
| PHY 45403 | DATA ANALYSIS AND COMPUTATIONAL PHYSICS TECHNIQUES |
| PHY 45501 | ELECTROMAGNETIC WAVES AND MODERN OPTICS |
| PHY 46101 | QUANTUM MECHANICS |
| PHY 46301 | INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS |

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| PHY 46401 | INTRODUCTION TO SOLID STATE PHYSICS |
| Additional Requirements (courses do not count in major GPA) | |
| Kent Core Basic Sciences | 6 |
| Minimum Total Credit Hours: | 50 |

- ¹ These courses fulfill the Validation by Educational Experience (VEE) requirements jointly sponsored by the Society of Actuaries, Casualty Actuarial Society and Canadian Institute of Actuaries.
- ² A minimum C grade must be earned to fulfill the writing-intensive course requirement.
- ³ A course may only count in one requirement even though it may appear in more than one.

Graduation Requirements

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

Foreign Language College Requirement

- Students pursuing the Bachelor of Science degree in the College of Arts and Sciences must complete 8 credit hours of foreign language.¹
 - Minimum Elementary I and II of the same language
- ¹ 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 their university foreign language experience 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 the Elementary I through Intermediate II level or (2) receiving credit through Credit by Exam (CBE), the College Level Examination Program (CLEP), the Advanced Placement (AP) exam or credit through the International Baccalaureate (IB) program; 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 8 credit hours and two courses, they will complete the remaining hours with general electives.

Roadmaps

- Mathematics Major (no concentration)
- Actuarial Mathematics Concentration

Mathematics Major (no concentration)

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.

| Course | Title | Credits |
|------------------------------|---|---------|
| Semester One | | |
| ! MATH 12002 | ANALYTIC GEOMETRY AND CALCULUS I (KMCR) | 5 |
| UC 10097 | DESTINATION KENT STATE: FIRST YEAR EXPERIENCE | 1 |
| ! Computer Science Elective | | 4 |
| Foreign Language | | 4 |
| Kent Core Requirement | | 3 |
| Credit Hours | | 17 |
| Semester Two | | |
| ! MATH 12003 | ANALYTIC GEOMETRY AND CALCULUS II | 5 |
| MATH 20011 | DECISION-MAKING UNDER UNCERTAINTY | 3 |
| ! PHY 23101 | GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB) | 5 |
| Foreign Language | | 4 |
| Credit Hours | | 17 |
| Semester Three | | |
| ! MATH 21001 | LINEAR ALGEBRA WITH APPLICATIONS | 3 |
| ! MATH 22005 | ANALYTIC GEOMETRY AND CALCULUS III | 4 |
| MATH 31011 | PROOFS IN DISCRETE MATHEMATICS | 3 |
| Kent Core Requirement | | 3 |
| Kent Core Requirement | | 3 |
| Credit Hours | | 16 |
| Semester Four | | |
| MATH 32044 | ORDINARY DIFFERENTIAL EQUATIONS | 3 |
| ! MATH 41021 | THEORY OF MATRICES | 3 |
| Kent Core Requirement | | 3 |
| Kent Core Requirement | | 3 |
| Kent Core Requirement | | 3 |
| Credit Hours | | 15 |
| Semester Five | | |
| ! MATH 41001 | MODERN ALGEBRA I (ELR) (WIC) | 3 |
| Allied Area Elective | | 3 |
| Pure Mathematics Elective | | 3 |
| Kent Core Requirements | | 3 |
| Kent Core Requirements | | 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 | | 3 |
| Kent Core Requirement | | 3 |
| Credit Hours | | 15 |
| Semester Seven | | |
| ! MATH 42001 | ANALYSIS I (ELR) (WIC) | 3 |
| Allied Area Elective | | 3 |
| Applied Mathematics Sequence | | 3 |

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|--------------------------------------|-----|
| General Elective | 4 |
| Credit Hours | 13 |
| Semester Eight | |
| ! MATH 42002 ANALYSIS II (ELR) (WIC) | 3 |
| Applied Mathematic Sequence | 3 |
| Pure Mathematics Elective | 3 |
| General Electives | 3 |
| Credit Hours | 12 |
| Minimum Total Credit Hours: | 120 |

Actuarial Mathematics Concentration

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.

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|-----------------------------|-----|
| General Electives | 4 |
| Credit Hours | 10 |
| Minimum Total Credit Hours: | 120 |

| Course | Title | Credits |
|---------------------------|---|---------|
| Semester One | | |
| ! MATH 12002 | ANALYTIC GEOMETRY AND CALCULUS I (KMCR) | 5 |
| UC 10097 | DESTINATION KENT STATE: FIRST YEAR EXPERIENCE | 1 |
| Computer Science Elective | | 4 |
| Kent Core Requirement | | 3 |
| Kent Core Requirement | | 3 |
| Credit Hours | | 16 |
| Semester Two | | |
| ! MATH 12003 | ANALYTIC GEOMETRY AND CALCULUS II | 5 |
| MATH 20011 | DECISION-MAKING UNDER UNCERTAINTY | 3 |
| MATH 21001 | LINEAR ALGEBRA WITH APPLICATIONS | 3 |
| Kent Core Requirement | | 3 |
| Kent Core Requirement | | 3 |
| Credit Hours | | 17 |
| Semester Three | | |
| ECON 22060 | PRINCIPLES OF MICROECONOMICS (KSS) | 3 |
| ! MATH 22005 | ANALYTIC GEOMETRY AND CALCULUS III | 4 |
| MATH 30055 | MATHEMATICAL THEORY OF INTEREST | 3 |
| MATH 31011 | PROOFS IN DISCRETE MATHEMATICS | 3 |
| Foreign Language | | 4 |
| Credit Hours | | 17 |
| Semester Four | | |
| ECON 22061 | PRINCIPLES OF MACROECONOMICS (KSS) | 3 |
| MATH 32044 | ORDINARY DIFFERENTIAL EQUATIONS | 3 |
| MATH 40011 | PROBABILITY THEORY AND APPLICATIONS | 3 |
| Kent Core Requirement | | 3 |
| Foreign Language | | 4 |
| Credit Hours | | 16 |
| Semester Five | | |
| ACCT 23020 | INTRODUCTION TO FINANCIAL ACCOUNTING | 3 |
| MATH 40055 | ACTUARIAL MATHEMATICS I (ELR) (WIC) | 4 |
| Mathematics Elective | | 3 |
| Kent Core Requirement | | 3 |
| Credit Hours | | 13 |
| Semester Six | | |
| FIN 36053 | BUSINESS FINANCE | 3 |
| ! MATH 40012 | THEORY OF STATISTICS | 3 |
| MATH 40056 | ACTUARIAL MATHEMATICS II | 4 |
| Kent Core Requirement | | 3 |
| General Elective | | 3 |
| Credit Hours | | 16 |
| Semester Seven | | |
| Mathematics Elective | | 3 |
| Allied Area Elective | | 3 |
| Kent Core Requirement | | 3 |
| General Electives | | 6 |
| Credit Hours | | 15 |
| Semester Eight | | |
| ECON 32050 | APPLIED ECONOMETRICS I (ELR) | 3 |
| ! MATH 40059 | STOCHASTIC ACTUARIAL MODELS | 3 |