

APPLIED MATHEMATICS - B.S.

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

About This Program

Our Bachelor of Science in Applied Mathematics program provides students with a strong foundation in mathematical theory and its application in real-world settings. With experienced faculty, cutting-edge technology and practical experience, you'll gain the skills needed to solve complex problems in a variety of industries, from finance and insurance to science and engineering. Enroll now and unlock endless career possibilities with a degree in applied mathematics. Read more...

Contact Information

- Program Coordinator: **Xiaoyu Zheng** | xzheng3@kent.edu | 330-672-9089
- Speak with an Advisor
- Chat with an Admissions Counselor

Program Delivery

- **Delivery:**
 - In person
- **Location:**
 - Kent Campus

Examples of Possible Careers and Salaries*

Data scientists and mathematical science occupations, all other

- 30.9% much faster than the average
- 33,200 number of jobs
- \$98,230 potential earnings

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

Statisticians

- 34.6% much faster than the average
- 42,700 number of jobs
- \$92,270 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

Code	Title	Credit Hours
Major Requirements (courses count in major GPA) ¹		
CS 13001	COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING (min C grade in 13001 or in both 13011 & 13012)	4
or CS 13011 & CS 13012	COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING and COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	
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 ²	3
MATH 21001	LINEAR ALGEBRA (min C grade)	3

MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III (min C grade)	4	CS 48101	GAME ENGINE CONCEPTS
MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS (min C grade)	3	ECON 32025	MONEY, CREDIT AND BANKING
MATH 40011	PROBABILITY THEORY AND APPLICATIONS (min C grade)	3	ECON 32040	INTERMEDIATE MICROECONOMIC THEORY AND APPLICATIONS
MATH 40012	THEORY OF STATISTICS (WIC) ³	3	ECON 32041	INTERMEDIATE MACROECONOMIC THEORY AND POLICY
MATH 41021	THEORY OF MATRICES	3	ECON 32050	APPLIED ECONOMETRICS I (ELR)
MATH 42031	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS (min C grade)	3	ECON 42050	DATA ACQUISITION, PREPARATION AND VISUALIZATION
MATH 42039	MODELING PROJECTS (ELR) (WIC) ³	3	ESCI 31080	STRUCTURAL GEOLOGY
MATH 42201	NUMERICAL COMPUTING I (min C grade)	3	ESCI 32066	GEOMORPHOLOGY
MATH 42202	NUMERICAL COMPUTING II	3	ESCI 41025	GENERAL GEOPHYSICS
PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	5	ESCI 41080	TECTONICS AND OROGENY
PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5	ESCI 42030	REMOTE SENSING
Allied Area Electives, choose from the following: ⁴		6	ESCI 42035	DATA ANALYSIS IN THE EARTH SCIENCES
BSCI 30050	HUMAN GENETICS		FIN 36054	INTERMEDIATE CORPORATE FINANCE
BSCI 40020	BIOLOGY OF AGING		FIN 36059	INTERMEDIATE INVESTMENTS
CHEM 30050	INTRODUCTION TO MATERIALS CHEMISTRY		FIN 46055	ADVANCED DERIVATIVE SECURITIES
CHEM 30105	ANALYTICAL CHEMISTRY I		FIN 46064	INTERNATIONAL BUSINESS FINANCE
CHEM 30106	ANALYTICAL CHEMISTRY II		FIN 46067	ADVANCED PORTFOLIO ANALYSIS
CHEM 30301	INORGANIC CHEMISTRY I		GEOG 31062	FUNDAMENTALS OF METEOROLOGY
CHEM 40302	INORGANIC CHEMISTRY II		GEOG 31064	CLIMATE AND THE ENVIRONMENT
CHEM 40303	INORGANIC CHEMISTRY III		GEOG 34070	ECONOMIC GEOGRAPHY
CHEM 40555	PHYSICAL CHEMISTRY I		GEOG 35065	GEOGRAPHY OF TRANSPORTATION AND SPATIAL INTERACTION
CHEM 40556	PHYSICAL CHEMISTRY II		GEOG 39002	STATISTICAL METHODS IN GEOGRAPHY
CHEM 40559	NANOMATERIALS		GEOG 41065	APPLIED CLIMATOLOGY
CS 33007	INTRODUCTION TO DATABASE SYSTEM DESIGN		GEOG 44070	SPATIAL ANALYSIS AND LOCATION THEORY
CS 33101	STRUCTURE OF PROGRAMMING LANGUAGES		GEOG 49070	GEOGRAPHIC INFORMATION SCIENCE
CS 33211	OPERATING SYSTEMS		GEOG 49080	ADVANCED GEOGRAPHIC INFORMATION SCIENCE
CS 33901	SOFTWARE ENGINEERING		GEOG 49085	WEB AND MOBILE GEOGRAPHIC INFORMATION SCIENCE
CS 35101	COMPUTER ORGANIZATION		GEOG 49162	CARTOGRAPHY
CS 35201	COMPUTER COMMUNICATION NETWORKS		GEOG 49230	REMOTE SENSING
CS 38101	INTRODUCTION TO GAME PROGRAMMING		MATH 30055	MATHEMATICAL THEORY OF INTEREST
CS 43006	THEORY OF OBJECT-ORIENTED PROGRAMMING		MATH 31011	PROOFS IN DISCRETE MATHEMATICS
CS 43111	STRUCTURE OF COMPILERS		MATH 40028	STATISTICAL LEARNING
CS 43202	SYSTEMS ADMINISTRATION		MATH 40051	TOPICS IN PROBABILITY THEORY AND STOCHASTIC PROCESSES
CS 43203	SYSTEMS PROGRAMMING		MATH 40055	ACTUARIAL MATHEMATICS I (ELR) (WIC) ³
CS 43301	SOFTWARE DEVELOPMENT FOR ROBOTICS		MATH 40056	ACTUARIAL MATHEMATICS II
CS 43305	ADVANCED DIGITAL DESIGN		MATH 40059	STOCHASTIC ACTUARIAL MODELS
CS 43401	SECURE PROGRAMMING		MATH 41001	MODERN ALGEBRA I (ELR) (WIC) ³
CS 44001	COMPUTER SCIENCE III-PROGRAMMING PATTERNS		MATH 41002	MODERN ALGEBRA II (ELR) (WIC) ³
CS 44003	MOBILE APPS IN IOS PROGRAMMING		MATH 42001	ANALYSIS I (ELR) (WIC) ³
CS 44105	WEB PROGRAMMING I		MATH 42002	ANALYSIS II (ELR) (WIC) ³
CS 44106	WEB PROGRAMMING II		MATH 42011	MATHEMATICAL OPTIMIZATION
CS 44201	ARTIFICIAL INTELLIGENCE		MATH 42021	GRAPH THEORY AND COMBINATORICS
CS 45203	COMPUTER NETWORK SECURITY		MATH 42024	NUMBERS AND GAMES
CS 45231	INTERNET ENGINEERING		MATH 42041	ADVANCED CALCULUS
CS 46101	DESIGN AND ANALYSIS OF ALGORITHMS		MATH 42045	PARTIAL DIFFERENTIAL EQUATIONS
CS 47101	COMPUTER GRAPHICS		MATH 42048	COMPLEX VARIABLES
CS 47205	INFORMATION SECURITY		MATH 45011	DIFFERENTIAL GEOMETRY
CS 47206	DATA SECURITY AND PRIVACY		MATH 45021	EUCLIDEAN GEOMETRY
CS 47207	DIGITAL FORENSICS		MATH 45022	LINEAR GEOMETRY
CS 47221	INTRODUCTION TO CRYPTOLOGY		MATH 46001	ELEMENTARY TOPOLOGY
			MATH 47011	THEORY OF NUMBERS

MATH 47021	HISTORY OF MATHEMATICS	
MATH 49992	INTERNSHIP IN MATHEMATICS (ELR)	
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	
Additional Requirements (courses do not count in major GPA)		
UC 10001	FLASHES 101	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 credits hour, including 39 upper-division credit hours)		7
Concentrations		
Choose from the following:		19
Applied Mathematics		
Computational Mathematics		
Financial Mathematics		
Probability and Statistics		
Minimum Total Credit Hours:		120

- ¹ MATH 30011, MATH 34001 and MATH 34002 cannot be applied to the major requirements.
- ² Minimum C grade required for the Computational Mathematics and the Probability and Statistics concentrations only.
- ³ A minimum C grade must be earned to fulfill the writing-intensive requirement.
- ⁴ A course may only count for one requirement even though it may appear more than once.

Applied Mathematics Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
MATH 42041	ADVANCED CALCULUS	3
MATH 42045	PARTIAL DIFFERENTIAL EQUATIONS	3
MATH 42048	COMPLEX VARIABLES	3
Additional Requirements (courses do not count in major GPA)		
Kent Core Social Sciences (must be from two disciplines)		3
Kent Core Additional		3

General Electives	4
Minimum Total Credit Hours:	19

Computational Mathematics Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
CS 23001	COMPUTER SCIENCE II: DATA STRUCTURES AND ABSTRACTION	4
MATH 23022	DISCRETE STRUCTURES FOR COMPUTER SCIENCE	3
MATH 40024	COMPUTATIONAL STATISTICS	3
MATH 42011	MATHEMATICAL OPTIMIZATION	3
Additional Requirements (courses do not count in major GPA)		
Kent Core Social Sciences (must be from two disciplines)		3
Kent Core Additional		3
Minimum Total Credit Hours:		19

Financial Mathematics Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
ACCT 23020	INTRODUCTION TO FINANCIAL ACCOUNTING	3
FIN 36053	BUSINESS FINANCE	3
MATH 40051	TOPICS IN PROBABILITY THEORY AND STOCHASTIC PROCESSES	3
MATH 42045	PARTIAL DIFFERENTIAL EQUATIONS	3
Additional Requirements (courses do not count in major GPA)		
ECON 22060	PRINCIPLES OF MICROECONOMICS (KSS)	3
ECON 22061	PRINCIPLES OF MACROECONOMICS (KSS)	3
General Elective		1
Minimum Total Credit Hours:		19

Probability and Statistics Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
MATH 40015	APPLIED STATISTICS	3
MATH 40024	COMPUTATIONAL STATISTICS	3
MATH 40051	TOPICS IN PROBABILITY THEORY AND STOCHASTIC PROCESSES	3
Additional Requirements (courses do not count in major GPA)		
Kent Core Social Sciences (must be from two disciplines)		3
Kent Core Additional		3
General Electives		4
Minimum Total Credit Hours:		19

Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
2.000	2.000

- A minimum grade may be required in some courses

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

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 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).

Roadmaps

Applied 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.

Semester One		Credits
CS 13001	COMPUTER SCIENCE I: PROGRAMMING AND	4
or CS 13011	PROBLEM SOLVING	
and	or COMPUTER SCIENCE IA: PROCEDURAL	
CS 13012	PROGRAMMING and COMPUTER SCIENCE IB:	
	OBJECT ORIENTED PROGRAMMING	
! MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
UC 10001	FLASHES 101	1
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
Foreign Language		4
Kent Core Requirement		3
Credit Hours		15
Semester Three		
MATH 21001	LINEAR ALGEBRA	3
! MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III	4
PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	5
Kent Core Requirement		3
Credit Hours		15
Semester Four		
MATH 41021	THEORY OF MATRICES	3
PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		14
Semester Five		
! MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS	3
! MATH 42031	MATHEMATICAL MODELS AND DYNAMICAL	3
or	SYSTEMS	
MATH 42201	or NUMERICAL COMPUTING I	

! MATH 42041	ADVANCED CALCULUS	3
or	or COMPLEX VARIABLES	
MATH 42048		
Allied Area Elective		3
Kent Core Requirement		3
Credit Hours		15
Semester Six		
! MATH 42039	MODELING PROJECTS (ELR) (WIC)	3
or	or NUMERICAL COMPUTING II	
MATH 42202		
! MATH 42045	PARTIAL DIFFERENTIAL EQUATIONS	3
Allied Area Elective		3
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		15
Semester Seven		
! MATH 40011	PROBABILITY THEORY AND APPLICATIONS	3
! MATH 42031	MATHEMATICAL MODELS AND DYNAMICAL	3
or	SYSTEMS	
MATH 42201	or NUMERICAL COMPUTING I	
! MATH 42041	ADVANCED CALCULUS	3
or	or COMPLEX VARIABLES	
MATH 42048		
Kent Core Requirement		3
General Elective		3
Credit Hours		15
Semester Eight		
! MATH 40012	THEORY OF STATISTICS (WIC)	3
! MATH 42039	MODELING PROJECTS (ELR) (WIC)	3
or	or NUMERICAL COMPUTING II	
MATH 42202		
General Electives		8
Credit Hours		14
Minimum Total Credit Hours:		120

Computational 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.

Semester One		Credits
CS 13001 or CS 13011	COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING	4
and CS 13012	or COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING and COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	
! MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
UC 10001	FLASHES 101	1
Foreign Language		4
Kent Core Requirement		3
Credit Hours		17
Semester Two		Credits
CS 23001	COMPUTER SCIENCE II: DATA STRUCTURES AND ABSTRACTION	4
! MATH 12003	ANALYTIC GEOMETRY AND CALCULUS II	5
MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
Foreign Language		4
Credit Hours		16
Semester Three		Credits
MATH 21001	LINEAR ALGEBRA	3
! MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III	4
PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	5
Kent Core Requirement		3
Credit Hours		15
Semester Four		Credits
MATH 41021	THEORY OF MATRICES	3
PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5
Kent Core Requirement		3
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		17
Semester Five		Credits
MATH 23022	DISCRETE STRUCTURES FOR COMPUTER SCIENCE	3
! MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS	3
! MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL COMPUTING I	3
Allied Area Elective		3
Kent Core Requirement		3
Credit Hours		15
Semester Six		Credits
MATH 42011	MATHEMATICAL OPTIMIZATION	3
! MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL COMPUTING II	3
Allied Area Elective		3
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		15
Semester Seven		Credits
! MATH 40011	PROBABILITY THEORY AND APPLICATIONS	3
MATH 40024	COMPUTATIONAL STATISTICS	3

! MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL COMPUTING I	3
Kent Core Requirement		3
General Elective		3
Credit Hours		15
Semester Eight		Credits
! MATH 40012	THEORY OF STATISTICS (WIC)	3
! MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL COMPUTING II	3
General Electives		4
Credit Hours		10
Minimum Total Credit Hours:		120

Financial 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.

Semester One		Credits
CS 13001 or CS 13011	COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING	4
and CS 13012	or COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING and COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	
! MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
UC 10001	FLASHES 101	1
Foreign Language		4
Kent Core Requirement		3
Credit Hours		17
Semester Two		Credits
! MATH 12003	ANALYTIC GEOMETRY AND CALCULUS II	5
MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
Foreign Language		4
Kent Core Requirement		3
Credit Hours		15
Semester Three		Credits
ECON 22060	PRINCIPLES OF MICROECONOMICS (KSS)	3
MATH 21001	LINEAR ALGEBRA	3
! MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III	4
PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	5
Credit Hours		15
Semester Four		Credits
ECON 22061	PRINCIPLES OF MACROECONOMICS (KSS)	3
MATH 41021	THEORY OF MATRICES	3
PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5
Kent Core Requirement		3
Credit Hours		14
Semester Five		Credits
ACCT 23020	INTRODUCTION TO FINANCIAL ACCOUNTING	3
MATH 40011	PROBABILITY THEORY AND APPLICATIONS	3
! MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL COMPUTING I	3
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		15

Semester Six		
FIN 36053	BUSINESS FINANCE	3
MATH 40012	THEORY OF STATISTICS (WIC)	3
! MATH 42039	MODELING PROJECTS (ELR) (WIC)	3
or	or NUMERICAL COMPUTING II	
MATH 42202		
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		15
Semester Seven		
MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS	3
MATH 40051	TOPICS IN PROBABILITY THEORY AND STOCHASTIC PROCESSES	3
! MATH 42031	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS	3
or	or NUMERICAL COMPUTING I	
MATH 42201		
Allied Area Elective		3
General Elective		3
Credit Hours		15
Semester Eight		
! MATH 42039	MODELING PROJECTS (ELR) (WIC)	3
or	or NUMERICAL COMPUTING II	
MATH 42202		
MATH 42045	PARTIAL DIFFERENTIAL EQUATIONS	3
Allied Area Elective		3
General Electives		5
Credit Hours		14
Minimum Total Credit Hours:		120

Probability and Statistics 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.

Semester One		Credits
CS 13001	COMPUTER SCIENCE I: PROGRAMMING AND	4
or CS 13011	PROBLEM SOLVING	
and	or COMPUTER SCIENCE IA: PROCEDURAL	
CS 13012	PROGRAMMING and COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	
! MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
UC 10001	FLASHES 101	1
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
Foreign Language		4
Kent Core Requirement		3
Credit Hours		15
Semester Three		
MATH 21001	LINEAR ALGEBRA	3
! MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III	4
PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	5
Kent Core Requirement		3
Credit Hours		15
Semester Four		
MATH 41021	THEORY OF MATRICES	3

PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		14
Semester Five		
! MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS	3
MATH 40011	PROBABILITY THEORY AND APPLICATIONS	3
! MATH 42031	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS	3
or	or NUMERICAL COMPUTING I	
MATH 42201		
Allied Area Elective		3
Kent Core Requirement		3
Credit Hours		15
Semester Six		
MATH 40012	THEORY OF STATISTICS (WIC)	3
! MATH 42039	MODELING PROJECTS (ELR) (WIC)	3
or	or NUMERICAL COMPUTING II	
MATH 42202		
Allied Area Elective		3
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		15
Semester Seven		
MATH 40024	COMPUTATIONAL STATISTICS	3
MATH 40051	TOPICS IN PROBABILITY THEORY AND STOCHASTIC PROCESSES	3
! MATH 42031	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS	3
or	or NUMERICAL COMPUTING I	
MATH 42201		
Kent Core Requirement		3
General Elective		3
Credit Hours		15
Semester Eight		
MATH 40015	APPLIED STATISTICS	3
! MATH 42039	MODELING PROJECTS (ELR) (WIC)	3
or	or NUMERICAL COMPUTING II	
MATH 42202		
General Electives		8
Credit Hours		14
Minimum Total Credit Hours:		120

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

- The **Probability and Statistics** concentration emphasizes the mathematics underlying processes that involve randomness and the mathematical tools used in the analysis of data.

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. Recognize problems with mathematical solutions from across disciplines.
2. Use precision and logical rigor to make both concrete and abstract conclusions.
3. Communicate and interact appropriately with different audiences.
4. Collaborate with others across disciplines in diverse contexts.
5. Use mathematical concepts and techniques in practical and applied problems.
6. Use technology to implement mathematical theory in applied contexts.

Full Description

The Bachelor of Science degree in Applied Mathematics emphasizes the tools most useful in science, engineering and technology applications: mathematical modeling, scientific computing and probability and statistics.

Students may apply early to the M.S. in Applied Mathematics 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.

The Applied Mathematics major comprises the following concentrations:

- The **Applied Mathematics** concentration emphasizes the classical aspects of the discipline, which are rooted in mathematical modeling and applications in the sciences. It couples well with the Physics minor or major.
- The **Computational Mathematics** concentration is designed for students with interests in numerical modeling and scientific computing. It pairs well with the Computer Science minor or major.
- The **Financial Mathematics** concentration prepares students for graduate programs in mathematical or computational finance or financial engineering.