APPLIED MATHEMATICS - B.S.

College of Sciences and Humanities
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 to real-world settings. With experienced faculty, cutting-edge technology and practical experience, you will gain the skills needed to solve complex problems in a variety of industries, from finance and insurance to science and engineering. Read more...

Contact Information

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- 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

- 33.5% much faster than the average
- 245,900 number of jobs
- $112,590 potential earnings

Mathematical science occupations, all other

- 4.0% about as fast as the average
- 5,000 number of jobs
- $71,490 potential earnings

Statisticians

- 8.5% much faster than the average
- 32,200 number of jobs
- $103,300 potential earnings

Operations research analysts

- 21.5% much faster than the average
- 112,100 number of jobs
- $91,290 potential earnings

Mathematicians

- -0.7% little or no change
- 2,400 number of jobs
- $121,680 potential earnings

Mathematical science teachers, postsecondary

- 2.3% slower than the average
- 58,900 number of jobs
- $79,350 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.

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 proficiency of the English language (unless they meet specific exceptions) through the submission of an English language proficiency test score or by completing English language classes at Kent State's English as a Second Language Center before entering their program. For more information, visit the admissions website for international students.

Former Students: Former Kent State students who have not attended another institution since Kent State and were not academically dismissed will complete the re-enrollment process through the Financial, Billing and Enrollment Center. Former students who attended another college or university since leaving Kent State must apply for admissions as a transfer or post-undergraduate student.

Transfer Students: Students who attended an educational institution after graduating from high school or earning their GED must apply as transfer students. For more information, visit the admissions website for transfer students.

Admission policies for undergraduate students may be found in the University Catalog's Academic Policies.

Students may be required to meet certain criteria to progress in their program. Any progression requirements will be listed on the program's Coursework tab

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 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
MATH 31011	PROOFS IN DISCRETE MATHEMATICS	3
MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS (min C grade)	3
MATH 40011	PROBABILITY THEORY AND APPLICATIONS (min C grade)	3
MATH 40012	THEORY OF STATISTICS (WIC) [3]	3
MATH 41021	THEORY OF MATRICES	3
MATH 42031	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS (min C grade)	3
MATH 42039	MODELING PROJECTS (ELR) (WIC) [3]	3
MATH 42201	NUMERICAL LINEAR ALGEBRA	3
MATH 42202	NUMERICAL APPROXIMATION AND OPTIMIZATION	3
PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	5
PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5
Computer Science Elective, choose from the following (min C grade):		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	
Allied Area Elective, choose from the following: [4]		3
BSCI 30050	HUMAN GENETICS	
BSCI 40020	BIOLOGY OF AGING	
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 ORGANIZATION	
CS 35201	COMPUTER COMMUNICATION NETWORKS	
CS 38101	INTRODUCTION TO GAME PROGRAMMING	
CS 43202	SYSTEMS ADMINISTRATION	
CS 43203	SYSTEMS PROGRAMMING	
CS 43301	SOFTWARE DEVELOPMENT FOR ROBOTICS	
CS 43305	ADVANCED DIGITAL DESIGN	
CS 43401	SECURE PROGRAMMING	
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	
ECON 32025	MONEY, CREDIT AND BANKING	
ECON 32040	INTERMEDIATE MICROECONOMIC THEORY AND APPLICATIONS	
ECON 32041	INTERMEDIATE MACROECONOMIC THEORY AND POLICY	
ECON 32050	APPLIED ECONOMETRICS I (ELR)	
ECON 42050	DATA ACQUISITION, PREPARATION AND VISUALIZATION	
ESCI 31080	STRUCTURAL GEOLOGY	
ESCI 32066	GEOMORPHOLOGY	
ESCI 41080	TECTONICS AND OROGENY	
ESCI 42030	REMOTE SENSING	
ESCI 42035	DATA ANALYSIS IN THE EARTH SCIENCES	
FIN 36054	INTERMEDIATE CORPORATE FINANCE	
FIN 36059	INTERMEDIATE INVESTMENTS	
FIN 46055	ADVANCED DERIVATIVE SECURITIES	
FIN 46064	INTERNATIONAL BUSINESS FINANCE	
FIN 46067	ADVANCED PORTFOLIO ANALYSIS	
GEOG 31062	FUNDAMENTALS OF METEOROLOGY	
GEOG 31064	CLIMATE AND THE ENVIRONMENT	
GEOG 34070	ECONOMIC GEOGRAPHY	
GEOG 39002	STATISTICAL METHODS IN GEOGRAPHY	
GEOG 41065	DATA ANALYSIS FOR CLIMATE AND THE ENVIRONMENT	
GEOG 49070	GEOGRAPHIC INFORMATION SCIENCE	
GEOG 49080	ADVANCED GEOGRAPHIC INFORMATION SCIENCE	
GEOG 49085	WEB AND MOBILE GEOGRAPHIC INFORMATION SCIENCE	
GEOG 49162	CARTOGRAPHY	
GEOG 49230	REMOTE SENSING	
MATH 30055	MATHEMATICAL THEORY OF INTEREST	
MATH 40028	STATISTICAL LEARNING	
MATH 40051	TOPICS IN PROBABILITY THEORY AND STOCHASTIC PROCESSES	
MATH 40055	ACTUARIAL MATHEMATICS I (ELR) (WIC) [3]	
MATH 40056	ACTUARIAL MATHEMATICS II	
MATH 40059	STOCHASTIC ACTUARIAL MODELS	
MATH 41001	MODERN ALGEBRA I (ELR) (WIC) [3]	

MATH 41002	MODERN ALGEBRA II (ELR) (WIC) [3]	
MATH 42001	ANALYSIS I (ELR) (WIC) [3]	
MATH 42002	ANALYSIS II (ELR) (WIC) [3]	
MATH 42011	MATHEMATICAL OPTIMIZATION	
MATH 42021	GRAPH THEORY AND COMBINATORICS	
MATH 42024	NUMBERS AND GAMES	
MATH 42041	ADVANCED CALCULUS	
MATH 42045	PARTIAL DIFFERENTIAL EQUATIONS	
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	
MATH 47021	HISTORY OF MATHEMATICS	
MATH 49992	INTERNSHIP IN MATHEMATICS (ELR)	
PHIL 41035	PHILOSOPHY OF SCIENCE	
PHIL 41038	INTERMEDIATE LOGIC	
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
American Civic Literacy Requirement [5]		3
Kent Core Composition		6
Kent Core Humanities and Fine Arts (minimum one course from each) [5]		6-9
Kent Core Social Sciences (must be from two disciplines) [5]		0-3
Kent Core Additional		3
General Electives (total credit hours depends on earning 120 credit hours, including 39 upper-division credit hours)		8
Concentrations		
Choose from the following:		18
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 toward major requirements.

2 Minimum C grade required for the Computational Mathematics and 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.

5 If students complete the American Civic Literacy requirement by taking HIST 12061, the course will apply to the Kent Core Humanities category. If they complete it with POL 10101, the course will apply to the Kent Core Social Sciences category.

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 Elective		3
Minimum Total Credit Hours:		**18**

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 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
General Elective		2
Minimum Total Credit Hours:		**18**

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
or MATH 40059	STOCHASTIC ACTUARIAL MODELS	
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
Minimum Total Credit Hours:		**18**

Probability and Statistics Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
Concentration Electives, choose from the following:		9

MATH 40015	APPLIED STATISTICS	
MATH 40024	COMPUTATIONAL STATISTICS	
MATH 40028	STATISTICAL LEARNING	
MATH 40051	TOPICS IN PROBABILITY THEORY AND STOCHASTIC PROCESSES	
Additional Requirements (courses do not count in major GPA)		
Kent Core Social Sciences (must be from two disciplines)		3
Kent Core Additional		3
General Elective		3
Minimum Total Credit Hours:		**18**

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 Sciences and Humanities must complete 8 credit hours of foreign language.[1]
- The following programs are exempt from this requirement: The Bachelor of Science in Cybercriminology and the Bachelor of Science in Medical Laboratory Science.[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 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). The Bachelor of Science in Cybercriminology exemption is due to its extensive collaboration with and contribution from the Information Technology program in the College of Applied and Technical Studies, which does not have a foreign language requirement.

Roadmaps

Applied Mathematics Concentration

This roadmap is a recommended semester-by-semester plan of study for this program. Students will work with their advisor to develop a sequence based on their academic goals and history. Courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		Credits
!	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	UC 10001	FLASHES 101	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 21001	LINEAR ALGEBRA	3
	Foreign Language		4
	Kent Core Requirement		3
	Credit Hours		**15**
	Semester Three		
!	MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III	4
	MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS	3
	PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	5
	Kent Core Requirement		3
	Credit Hours		**15**
	Semester Four		
!	MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
	MATH 31011	PROOFS IN DISCRETE MATHEMATICS	3
	PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5
	Kent Core Requirement		3
	Credit Hours		**14**
	Semester Five		
!	MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL LINEAR ALGEBRA	3
!	MATH 42041 or MATH 42048	ADVANCED CALCULUS or COMPLEX VARIABLES	3
	Allied Area Elective		3
	American Civic Literacy Requirement		3
	Kent Core Requirement		3
	Credit Hours		**15**
	Semester Six		
!	MATH 40011	PROBABILITY THEORY AND APPLICATIONS	3
!	MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL APPROXIMATION AND OPTIMIZATION	3
	MATH 42045	PARTIAL DIFFERENTIAL EQUATIONS	3
	Kent Core Requirement		3
	Kent Core Requirement		3
	Credit Hours		**15**
	Semester Seven		
	MATH 40012	THEORY OF STATISTICS (WIC)	3
!	MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL LINEAR ALGEBRA	3
	MATH 42041 or MATH 42048	ADVANCED CALCULUS or COMPLEX VARIABLES	3
	Kent Core Requirement		3
	General Elective		3
	Credit Hours		**15**
	Semester Eight		
	MATH 41021	THEORY OF MATRICES	3
	MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL APPROXIMATION AND OPTIMIZATION	3

	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 program. Students will work with their advisor to develop a sequence based on their academic goals and history. Courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		**Credits**
!	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	UC 10001	FLASHES 101	1
	Computer Science Elective		4
	Foreign Language		4
	Kent Core Requirement		3
		Credit Hours	**17**
	Semester Two		
	CS 23001	COMPUTER SCIENCE II: DATA STRUCTURES AND ABSTRACTION	4
!	MATH 12003	ANALYTIC GEOMETRY AND CALCULUS II	5
!	MATH 21001	LINEAR ALGEBRA	3
	Foreign Language		4
		Credit Hours	**16**
	Semester Three		
!	MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III	4
	MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS	3
	PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	5
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Four		
!	MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
	MATH 31011	PROOFS IN DISCRETE MATHEMATICS	3
	PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5
	Kent Core Requirement		3
		Credit Hours	**14**
	Semester Five		
!	MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL LINEAR ALGEBRA	3
	Allied Area Elective		3
	American Civic Literacy Requirement		3
	Kent Core Requirement		3
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Six		
!	MATH 40011	PROBABILITY THEORY AND APPLICATIONS	3
	MATH 42011	MATHEMATICAL OPTIMIZATION	3
!	MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL APPROXIMATION AND OPTIMIZATION	3
	Kent Core Requirement		3
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Seven		
	MATH 40012	THEORY OF STATISTICS (WIC)	3
	MATH 40024	COMPUTATIONAL STATISTICS	3
!	MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL LINEAR ALGEBRA	3
	Kent Core Requirement		3
	General Elective		3
		Credit Hours	**15**
	Semester Eight		
	MATH 41021	THEORY OF MATRICES	3
	MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL APPROXIMATION AND OPTIMIZATION	3
	General Electives		7
		Credit Hours	**13**
		Minimum Total Credit Hours:	**120**

Financial Mathematics Concentration

This roadmap is a recommended semester-by-semester plan of study for this program. Students will work with their advisor to develop a sequence based on their academic goals and history. Courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		**Credits**
!	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	UC 10001	FLASHES 101	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 21001	LINEAR ALGEBRA	3
	Foreign Language		4
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Three		
!	ECON 22060	PRINCIPLES OF MICROECONOMICS (KSS)	3
!	MATH 22005	ANALYTIC GEOMETRY AND CALCULUS III	4
!	MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS	3
	PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	5
		Credit Hours	**15**
	Semester Four		
!	ECON 22061	PRINCIPLES OF MACROECONOMICS (KSS)	3
!	MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
	MATH 31011	PROOFS IN DISCRETE MATHEMATICS	3
	PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5
		Credit Hours	**14**
	Semester Five		
	ACCT 23020	INTRODUCTION TO FINANCIAL ACCOUNTING	3
!	MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL LINEAR ALGEBRA	3
	Allied Area Elective		3
	American Civic Literacy Requirement		3
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Six		
	FIN 36053	BUSINESS FINANCE	3

!	MATH 40011	PROBABILITY THEORY AND APPLICATIONS	3
	MATH 41021	THEORY OF MATRICES	3
!	MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL APPROXIMATION AND OPTIMIZATION	3
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Seven		
!	MATH 40012	THEORY OF STATISTICS (WIC)	3
!	MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL LINEAR ALGEBRA	3
	Kent Core Requirement		3
	Kent Core Requirement		3
	General Elective		3
		Credit Hours	**15**
	Semester Eight		
	MATH 40051 or MATH 40059	TOPICS IN PROBABILITY THEORY AND STOCHASTIC PROCESSES or STOCHASTIC ACTUARIAL MODELS	3
	MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL APPROXIMATION AND OPTIMIZATION	3
	MATH 42045	PARTIAL DIFFERENTIAL EQUATIONS	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 program. Students will work with their advisor to develop a sequence based on their academic goals and history. Courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		**Credits**
!	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	UC 10001	FLASHES 101	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
	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 31011	PROOFS IN DISCRETE MATHEMATICS	3
	MATH 32044	ORDINARY DIFFERENTIAL EQUATIONS	3
!	MATH 40011	PROBABILITY THEORY AND APPLICATIONS	3
	PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	5
		Credit Hours	**14**
	Semester Five		
	MATH 40012	THEORY OF STATISTICS (WIC)	3
!	MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL LINEAR ALGEBRA	3
	Concentration Elective		3
	American Civic Literacy Requirement		3
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Six		
!	MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL APPROXIMATION AND OPTIMIZATION	3
	MATH 41021	THEORY OF MATRICES	3
	Allied Area Elective		3
	Kent Core Requirement		3
	Kent Core Requirement		3
		Credit Hours	**15**
	Semester Seven		
!	MATH 42031 or MATH 42201	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS or NUMERICAL LINEAR ALGEBRA	3
	Concentration Elective		3
	Kent Core Requirement		3
	Kent Core Requirement		3
	General Elective		3
		Credit Hours	**15**
	Semester Eight		
	MATH 42039 or MATH 42202	MODELING PROJECTS (ELR) (WIC) or NUMERICAL APPROXIMATION AND OPTIMIZATION	3
	Concentration Elective		3
	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.	
American Civic Literacy	3 credit hours
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**

Program Learning Outcomes

Graduates of this program will be able to:

1. Formulate and interpret mathematical models for real-world applications.
2. Apply mathematical concepts, numerical methods and data visualization techniques to analyze and solve applied problems.
3. Communicate mathematical ideas and results clearly and effectively in written and oral forms.

Program Policies

Foreign Language Requirements

In general, students may elect any foreign language taught through the Department of Modern and Classical Language Studies. However, certain majors, concentrations and minors require specific languages or limit the languages from which students may choose. In addition, students who plan to pursue graduate study may need particular languages for that study. In such cases, students should seek the advice of the appropriate department before selecting a language.

Progress Toward Fulfillment

College of Sciences and Humanities students are encouraged to begin meeting the foreign language requirement as early as possible in their program to ensure timely degree completion.

Mandatory Outcomes Assessment

In addition to the other General Requirements of the college, candidates for an undergraduate degree in the College of Sciences and Humanities are required, as a condition of graduation, to participate in an outcomes assessment. These outcomes assessments are conducted by each undergraduate degree program in the College of Sciences and Humanities.

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.

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

Students may apply early to the following master's degree programs 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.

- Master of Arts in Economics degree
- Master of Science degree in Applied Mathematics