Mathematics, B.S.

Program Description

The program of study leading to the Bachelor of Science with a major in Mathematics offers formal training in problem solving, critical and quantitative thinking and logical argument. It also provides a solid foundation in the application of analytical, geometrical, and numerical methods to real world problems. This program is highly customizable. In addition to a core set of mathematics courses, the program also requires completion of a concentration or minor that prepares the student for graduate study or for employment in various mathematics and statistics-related fields. The goal of this major is to assist students in acquiring both a deep understanding of mathematics and an ability to apply it to science and industry.

 This program is a part of the College of Science and Mathematics.

Admission, Enrollment, and Graduation Policies

Admission Requirements

This program does not have specific admission requirements and only admission to Kennesaw State University is required. For more information, please visit the Admissions section of the Catalog.

Graduation Requirements

Each student is expected to meet the requirements outlined in Academic Policies 5.0 PROGRAM REQUIREMENTS & GRADUATION.

Program Course Requirements

Core IMPACTS Curriculum (42 Credit Hours)

General Education Core IMPACTS Curriculum

Core IMPACTS Curriculum Requirements Specific to This Major|

Science Majors: Must take MATH 1113 or higher in the Mathematics & Quantitative Skills and MATH 1179 or higher in Applied Math.

Science and Engineering Majors: Must take two four-hour laboratory sciences in Natural Sciences. Students must choose from CHEM 1211 / 1211L , CHEM 1212 / 1212L , PHYS 1111 / 1111L*, PHYS 1112 / 1112L , PHYS 2211 / 2211L*, PHYS 2212 / 2212L , BIOL 1107 / 1107L , or BIOL 1108 / 1108L.

*Students cannot take both PHYS 1111/L and PHYS 2211/L nor PHYS 1112/L and PHYS 2212/L.

Core Field of Study (18 Credit Hours)
Students must earn a grade of "C" or better in these courses.

- MATH 2202: Calculus II
- MATH 2203: Calculus III
- MATH 2306: Ordinary Differential Equations
- MATH 2390: Introduction to Logic, Set Theory, and Proofs
- CSE 1321: Programming and Problem Solving I
- CSE 1321L: Programming and Problem Solving I Laboratory

Major Requirements (26 Credit Hours)
Students must earn a grade of "C" or better in these courses.

- SCM 2000: Culture and Success in Science and Mathematics
- MATH 3332: Probability Theory
- MATH 3204: Calculus IV
- MATH 3260: Linear Algebra I
- MATH 4361: Modern Algebra I
- MATH 4381: Real Analysis I
- MATH 3261: Numerical Methods
  or
- MATH 3262: Mathematical Modeling
- MATH 3322: Graph Theory
  or
- MATH 3324: Enumerative Combinatorics
  Two (2) credit hours carried over from Technology, Mathematics and Sciences.

Major Concentrations (18 Credit Hours)
Students must earn a grade of "C" or better in these courses.

Discrete Mathematics and Operations Research Concentration

Required Courses (15 Credit Hours)

- MATH 3322: Graph Theory
  or
- MATH 3324: Enumerative Combinatorics

- MATH 3272: Introduction to Linear Programming
  or
- ISYE 3400: Deterministic Operations Research
- ISYE 3600: Probability and Statistics II
  or
- MATH 4260: Linear Algebra II
- MATH 4362: Modern Algebra II
  or
- MATH 4382: Real Analysis II
- ISYE 4200: Engineering Optimization: Stochastic Decision Models

Elective Courses (3 Credit Hours)

Select 3 credit hours from the following list of courses:

- CRJU 3301: Research Methods in Criminal Justice
- CS 4306: Algorithm Analysis
- FIN 3100: Principles of Finance
- IS 3100: Information Systems Management
- ISYE 4500: System Modeling & Simulation
- ISYE 3400: Deterministic Operations Research
- ISYE 3600: Probability and Statistics II
- SOCI 4432: Criminology
  Any 3000-4000 level MATH or STAT course

Pure Mathematics Concentration

Required Courses (15 Credit Hours)

- MATH 4260: Linear Algebra II
- MATH 4362: Modern Algebra II
- MATH 4382: Real Analysis II
- MATH 4391: Complex Analysis
- MATH 4596: Topology
  or
- MATH 3496: Elementary Number Theory

Elective Courses (3 Credit Hours)

Select 3 credit hours from the following list of courses:

- CRJU 3301: Research Methods in Criminal Justice
- CS 4306: Algorithm Analysis
- FIN 3100: Principles of Finance
- IS 3100: Information Systems Management
- ISYE 3400: Deterministic Operations Research
- ISYE 3600: Probability and Statistics II
- ISYE 4200: Engineering Optimization: Stochastic Decision Models
- ISYE 4500: System Modeling & Simulation
- SOCI 4432: Criminology
  Any 3000-4000 level MATH or STAT course

Computational and Applied Mathematics Concentration

Required Courses (15 Credit Hours)

- MATH 3261: Numerical Methods
  or
- MATH 3262: Mathematical Modeling
- MATH 4260: Linear Algebra II
- MATH 4310: Partial Differential Equations
- MATH 4391: Complex Analysis
- MATH 4362: Modern Algebra II
  or
- MATH 4382: Real Analysis II

Elective Courses (3 Credit Hours)

Select 3 credit hours from the following list of courses:

- CRJU 3301: Research Methods in Criminal Justice
- CS 4306: Algorithm Analysis
- FIN 3100: Principles of Finance
- IS 3100: Information Systems Management
- ISYE 4500: System Modeling & Simulation
- ISYE 3400: Deterministic Operations Research
- ISYE 3600: Probability and Statistics II
- ISYE 4200: Engineering Optimization: Stochastic Decision Models

- SOCI 4432: Criminology
  Any 3000-4000 level MATH or STAT course

Statistics Concentration

Students may declare the Data Science and Analytics Minor as part of the Statistics Concentration.

Required Courses (9 Credit Hours)

- DATA 3010: Computer Applications of Statistics
- STAT 3120: Statistical Methods I
  or
- STAT 3125: Biostatistics
- STAT 3130: Statistical Methods II

Elective Courses (6 Credit Hours)

Select 6 credit hours from the following list of courses:

- IS 4540: Data Mining
- STAT 4025: Clinical Trial Design
- DATA 4030: Programming in R
- STAT 4120: Applied Experimental Design
- STAT 4125: Analysis of Human Studies
- STAT 4210: Applied Regression Analysis
- DATA 4310: Statistical Data Mining
- DATA 4330: Applied Binary Classification
- DATA 4400: Directed Study
- DATA 4490: Special Topics in Statistics
  3 credit hours from the following list of courses:
- DATA 3396: Cooperative Study
  or
- DATA 3398: Internship

Additional Elective Course (3 Credit Hours)

Select 3 credit hours from the following list of courses:

- CRJU 3301: Research Methods in Criminal Justice

- CS 4306: Algorithm Analysis
- FIN 3100: Principles of Finance
- IS 3100: Information Systems Management
- ISYE 3400: Deterministic Operations Research
- ISYE 3600: Probability and Statistics II
- ISYE 4200: Engineering Optimization: Stochastic Decision Models
- ISYE 4500: System Modeling & Simulation
- SOCI 4432: Criminology
  Any 3000 or 4000 level MATH or STAT course

Major Electives (9 Credit Hours)
Students must earn a grade of "C" or better in these courses.

Related Studies (9 Credit Hours)
Select 9 credit hours of 2000-level or above coursework from the following prefixes: ACCT, AADS, AMST, ANTH, ATT, ACST, ARCH, ANIM, ART, ARED, ARH, ASIA, BIOL, BUSA, BLAW, CHEM, CHIN, CE, CET, COM, JOUR, MENT, ORGC, PR, CPE, CGDD, CS, CSE, CM, CRJU, CYBR, DATA, DANC, ECE, ECON, EDUC, EDMG, EDRD, ECET, EE, ENGR, EDG, ENGL, ENVS, EUST, ES, FILM, FIN, FTA, HEBR, FREN, GWST, GEOG, GRMN, HPE, HIST, HON. HMGT, HS, IET, ISYE, IS, IT, IAD, HIS, INTS, ISD, STS, EURO, ITAL, JPN, KOR, ICT, LATN, LRS, MATH, ME, MET, MTRE, MUSI. PAX, PERS, PHIL, PHYS, POLS. PORT, PSYC, RELS, REET, RUSS, SOCI, SWE, SPAN, STAT, SA, SURV, TCOM, or WRIT.

University Electives (7 Credit Hours)
In accordance with KSU Graduation Policy, students must earn a grade of "D" or better in these courses while maintaining a minimum 2.00 cumulative GPA.

Free Electives (7 Credit Hours)
Select 7 credit hours of 1000-4000 level coursework from the University Catalog.

Program Total (120 Credit Hours)