MATHEMATICS BACHELOR OF SCIENCE

Program Overview

Students majoring in mathematics can create a plan within the program appropriate for a variety of careers that require an understanding of structures, patterns, and analysis. Students may also prepare for further graduate study in theoretical or applied mathematics or related fields such as other scientific disciplines, economics, and business administration. Opportunities for mathematics majors arise in computing or high-technology firms, chemical and pharmaceutical manufacturers, government agencies, financial institutions, and the insurance industry to name a few.

Students who desire a more scientific emphasis will complete the College of Arts and Sciences requirements for a B.S. degree. The mathematics requirements for the B.A. and B.S. degrees are the same.

All programs should be planned in careful consultation with a faculty mentor.

B.S. Degree Requirements

The Bachelor of Science degree is intended for students who desire a more scientific emphasis. Students who desire less of a scientific emphasis should consider the Bachelor of Arts degree. There are special requirements for the Bachelor of Science degree. See the Graduation Requirements (https://catalog.drake.edu/undergraduate/arts-sciences/graduation-requirements/) section of this catalog for details.

Code	Title	Hours
Core Courses		
CS 065	INTRODUCTION TO COMPUTER SCIENCE I	3
MATH 050	CALCULUS I	3
MATH 070	CALCULUS II	3
MATH 080	LINEAR ALGEBRA	3
MATH 100	CALCULUS III	3
MATH 101	MATHEMATICS REASONING	3
MATH 110	MULTIVARIATE CALCULUS	3
MATH 191	MATHEMATICS CAPSTONE	3
Upper Level Courses		**18**
Select three sequences from below, one of which must be either sequence 1 or 2: [1]		
1. Algebra Sequence:		
Select two of the following:		
MATH 155	ABSTRACT ALGEBRA I	
MATH 156	ABSTRACT ALGEBRA II	
MATH 176	ADVANCED LINEAR ALGEBRA	
2. Analysis Sequence:		
Select two of the following:		
MATH 184	INTRODUCTION TO REAL ANALYTICAL MATHEMATICS I	
MATH 185	INTRODUCTION TO REAL ANALYSIS II	
MATH 187	COMPLEX ANALYSIS	
3. Differential Equations Sequence:		
MATH 120	APPLIED DIFFERENTIAL EQUATIONS I	
MATH 121	APPLIED DIFFERENTIAL EQUATIONS II	
4. Mathematical Modeling Sequence:		
Select two of the following courses:		
MATH 120	APPLIED DIFFERENTIAL EQUATIONS I	
MATH 125	MATHEMATICS MODELING	
MATH 126	INDUSTRIAL MATHEMATICS	
MATH 127	INTRODUCTION TO GAME THEORY	
5. Computational Mathematics Sequence:		
MATH 165	INTRODUCTION TO NUMERICAL ANALYSIS	
MATH 176	ADVANCED LINEAR ALGEBRA	
6. Computational Science Sequence:		
Select two of the following courses:		
MATH 139	THEORY OF COMPUTATION	
MATH 148	COUNTING WITH COMBINATORICS	
MATH 150	GRAPH THEORY	
7. Geometry/History Sequence (These courses are not regularly scheduled):		
MATH 153	MODERN GEOMETRY	
MATH 157	HISTORY OF MATHEMATICS	
8. Physics or Actuarial Science/Data Analytics Sequence:		
Select one of the following sets:		
PHY 121 & PHY 122	THEORETICAL MECHANICS and ELECTROMAGNETIC THEORY	
MATH 131 & 131L & ACTS 135	INTRODUCTION TO PROBABILITY I and INTRODUCTION TO PROBABILITY LAB I and MATHEMATICAL STATISTICS	
STAT 130 & STAT 170	PROBABILITY FOR ANALYTICS and REGRESSION AND TIME SERIES	
Total Hours		**42**

[1] Upper Level Courses - Upper Level Courses - Students will select three sequences from below, one of which must be either sequence 1 or 2. Each course fulfills requirements in only one sequence. An advisor may, in consultation with the Department, substitute an alternative sequence of paired courses from another major that has a significant and appropriate emphasis on the mathematical aspects of that major. The limit on sequences from another major (Sequence 8) is one.

- Sequences 1, 2, 6, 7 and 8. Courses in these sequences develop theoretical skills in preparation for graduate programs in Computer Science, Mathematics, and Physics. Applications of the theory are included within the courses.
- Sequences 3, 4, 5, 6, and 8. Courses in these sequences develop computational skills that are useful in the workplace. Courses include a theoretical grounding in computational and applied mathematics. These courses complement other majors such as Actuarial Science, Computer Science, Data Analytics, Physics, and other science majors.

In addition to programmatic requirements, students are responsible for satisfying all requirements of the Drake Curriculum (https://catalog.drake.edu/undergraduate/academic-information/drake-curriculum/), including Areas of Inquiry (AOI).

Student must also satisfy university graduation requirements (https://catalog.drake.edu/undergraduate/academic-information/graduation-requirements/) for all undergraduate students.