Mathematics and Computer Science BS

Overview

Science and technology are the foundations of our future. The Department of Computer and Information Sciences (CIS) is focused on the understanding of fundamental scientific principles and the application of these principles to solving complex problems, using computing technology.

The **Bachelor of Science in Mathematics and Computer Science** is intended for students who are interested in computer science and mathematical computing. It provides a solid knowledge of theoretical computer science and its mathematical foundations and compares favorably with other theoretically-oriented computer science programs. The program is particularly recommended to those students who are interested in pursuing a graduate degree in computer science or computational mathematics.

Campus Location: Main

Program Code: ST-MACS-BS

Distinction in Major

To graduate with distinction in this major, a student must satisfy the following criteria:

- achieve a minimum 3.50 cumulative GPA
- achieve a minimum 3.50 GPA in the 3000+ Computer Science courses required for the major
- achieve a minimum 3.50 GPA in the 3000+ Mathematics courses required for the major
- successfully complete MATH 3098 and one of the following two-semester analysis sequences
  - MATH 3043 and MATH 3044
  - MATH 3137 and MATH 3138
  - MATH 3141 and MATH 3142

Undergraduate Contact Information

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Learn more about the Bachelor of Science in Mathematics and Computer Science.

These requirements are for students who matriculated in academic year 2024-2025. Students who matriculated prior to fall 2024 should refer to the Archives *to view the requirements for their Bulletin year.*

Bachelor of Science Requirements

Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)
   - Students must complete all University requirements including those listed below.
   - All undergraduate students must complete at least two writing-intensive courses for a total of at least six credits at Temple as part of their major. The specific writing-intensive course options for this major are:

Code	Title	Credit Hours
CIS 3296	Software Design	
CIS 4397	Independent Research in Computer Science	
CIS 4398	Projects in Computer Science	
MATH 3096	Introduction to Modern Algebra	
or MATH 3098	Modern Algebra	
MATH 4096	Senior Problem Solving	

   - Students must complete the General Education (GenEd) requirements.
     - See the General Education section of the *Undergraduate Bulletin* for the GenEd curriculum.
     - Students who complete CST majors receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
   - Students must satisfy general Temple University residency requirements.
2. College Requirements
   - A minimum of 90 total credits within the College of Science & Technology (CST), the College of Liberal Arts (CLA), and/or the College of Engineering (ENG).
     - A minimum of 45 of these credits must be upper-level (courses numbered 2000 and above).
   - Complete a one-credit first-year or transfer seminar.
     - SCTC 1001 CST First Year Seminar for every entering first-year CST student.
     - SCTC 2001 CST Transfer Seminar for every entering transfer CST student.
3. Major Requirements for Bachelor of Science (72-74 s.h.)

   At least 10 courses required for the major must be completed at Temple. At least 5 Math and 4 Computer Science courses must be completed at Temple.

Code	Title	Credit Hours
Computer & Information Science courses		
CIS 1068	Program Design and Abstraction	4
or CIS 1968	Honors Program Design and Abstraction	
CIS 1166	Mathematical Concepts in Computing I	4
or CIS 1966	Honors Mathematical Concepts in Computing I	
CIS 2107	Computer Systems and Low-Level Programming	4
CIS 2166	Mathematical Concepts in Computing II	4
CIS 2168	Data Structures	4
CIS 3207	Introduction to Systems Programming and Operating Systems	4
CIS 3223	Data Structures and Algorithms	3
Select one of the following:		4
CIS 3296	Software Design [1]	
3000+ CIS Elective [2]		
Mathematics courses		
MATH 1041	Calculus I	4
or MATH 1941	Honors Calculus I	
MATH 1042	Calculus II	4
or MATH 1942	Honors Calculus II	
MATH 2043	Calculus III	4
or MATH 2943	Honors Calculus III	

Select one of the following:		3-4
MATH 2101	Linear Algebra	
MATH 2103	Linear Algebra with Computer Lab (F)	
MATH 2111	Basic Concepts of Math	3
MATH 3031	Probability Theory I	3
MATH 3096	Introduction to Modern Algebra	3
or MATH 3098	Modern Algebra	
Select one of the following:		3-4
MATH 3043	Numerical Analysis I (F)	
MATH 3137	Real & Complex Analysis I (F)	
Select one of the following:		3
MATH 3138	Real & Complex Analysis II (S) [3]	
3000+ MATH Elective [4]		
Science courses		
Select one of the following sequences:		8
CHEM 1031 & CHEM 1033 & CHEM 1032 & CHEM 1034	General Chemistry I and General Chemistry Laboratory I and General Chemistry II and General Chemistry Laboratory II	
CHEM 1951 & CHEM 1953 & CHEM 1952 & CHEM 1954	Honors General Chemical Science I and Honors Chemical Science Laboratory I and Honors General Chemical Science II and Honors Chemical Science Laboratory II	
PHYS 1061 & PHYS 1062	Elementary Classical Physics I and Elementary Classical Physics II	
PHYS 1961 & PHYS 1962	Honors Elementary Classical Physics I and Honors Elementary Classical Physics II (F, S)	
PHYS 2021 & PHYS 2022	General Physics I and General Physics II	
PHYS 2921 & PHYS 2922	Honors General Physics I and Honors General Physics II (F, S)	
Capstone course		
Select one of the following:		3
CIS 4397	Independent Research in Computer Science	
CIS 4398	Projects in Computer Science [1]	
MATH 4096	Senior Problem Solving [3]	
Total Credit Hours		**72-74**

Code	**Title**	**Credit Hours**
(F) - Fall only course		
(S) - Spring only course		

1. CIS 3296 is a prerequisite for CIS 4398 and should be taken as a 3000+ Computer & Information Science elective if you plan to take CIS 4398 as the capstone course.
2. Must be approved by Computer & Information Science faculty advisor.
3. MATH 3138 is a prerequisite for MATH 4096 and should be selected as a 3000+ Math elective if you plan to take MATH 4096 as the capstone course.
4. Must be approved by Mathematics faculty advisor. Students may take MATH 2121 to fulfill this requirement.

Suggested Academic Plan

Bachelor of Science in Mathematics and Computer Science

Suggested Plan for New Students Starting in the 2024-2025 Academic Year

Year 1		
Fall		**Credit Hours**
CIS 1068 or CIS 1968	Program Design and Abstraction or Honors Program Design and Abstraction	4
MATH 1041 or MATH 1941	Calculus I or Honors Calculus I	4
SCTC 1001	CST First Year Seminar	1
ENG 0802 or ENG 0812 or ENG 0902	Analytical Reading and Writing [GW] or Analytical Reading and Writing: ESL [GW] or Honors Analytical Reading and Writing [GW]	4
GenEd Breadth Course		3
	Credit Hours	**16**
Spring		
CIS 1166 or CIS 1966	Mathematical Concepts in Computing I or Honors Mathematical Concepts in Computing I	4
MATH 1042 or MATH 1942	Calculus II or Honors Calculus II	4
IH 0851 or IH 0951	Intellectual Heritage I: The Good Life [GY] or Honors Intellectual Heritage I: The Good Life [GY]	3
GenEd Breadth Course		3
Elective		1
	Credit Hours	**15**
Year 2		
Fall		
CIS 2168	Data Structures	4
MATH 2043 or MATH 2943	Calculus III or Honors Calculus III	4
Select one of the following:		3-4
MATH 2101	Linear Algebra	
MATH 2103	Linear Algebra with Computer Lab (F)	
IH 0852 or IH 0952	Intellectual Heritage II: The Common Good [GZ] or Honors Intellectual Heritage II: The Common Good [GZ]	3
Elective		1-0
	Credit Hours	**15**
Spring		
CIS 2107	Computer Systems and Low-Level Programming	4
CIS 2166	Mathematical Concepts in Computing II	4
MATH 2111	Basic Concepts of Math	3
GenEd Breadth Course		3
Elective		2
	Credit Hours	**16**
Year 3		
Fall		
CIS 3207	Introduction to Systems Programming and Operating Systems	4
Select one of the following:		3-4
MATH 3043	Numerical Analysis I (F)	
MATH 3137	Real & Complex Analysis I (F)	
Select one of the following:		4

CHEM 1031 & CHEM 1033	General Chemistry I and General Chemistry Laboratory I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I and Honors Chemical Science Laboratory I	
PHYS 1061	Elementary Classical Physics I	
PHYS 1961	Honors Elementary Classical Physics I (F)	
PHYS 2021	General Physics I	
PHYS 2921	Honors General Physics I (F)	
GenEd Breadth Course		4-3
	Credit Hours	**15**
Spring		
CIS 3223	Data Structures and Algorithms	3
Select one of the following:		3
MATH 3138	Real & Complex Analysis II (S) [1]	
3000+ MATH Elective [1]		
Select one of the following:		4
CHEM 1032 & CHEM 1034	General Chemistry II and General Chemistry Laboratory II	
CHEM 1952 & CHEM 1954	Honors General Chemical Science II and Honors Chemical Science Laboratory II	
PHYS 1062	Elementary Classical Physics II	
PHYS 1962	Honors Elementary Classical Physics II (S)	
PHYS 2022	General Physics II	
PHYS 2922	Honors General Physics II (S)	
GenEd Breadth Course		3
Elective		3
	Credit Hours	**16**
Year 4		
Fall		
Select one of the following:		4
CIS 3296	Software Design [WI] [2]	
3000+ CIS Elective [2]		
MATH 3031	Probability Theory I	3
Select one of the following:		3
MATH 3096	Introduction to Modern Algebra [WI]	
MATH 3098	Modern Algebra [WI]	
Elective		3
Elective		2
	Credit Hours	**15**
Spring		
Select one of the following:		3
CIS 4397	Independent Research in Computer Science [WI]	
CIS 4398	Projects in Computer Science [WI] [2]	
MATH 4096	Senior Problem Solving [WI] [1]	
Elective		3
Elective		3
Elective		3
Elective		3
	Credit Hours	**15**
	Total Credit Hours	**123**

Code	Title	Credit Hours

(F) - Fall only course

(S) - Spring only course

1 MATH 3138 is a prerequisite for MATH 4096 and should be selected as a 3000+ Math elective if you plan to take MATH 4096 as the capstone course. Mathematics electives must be 3000 or higher, and they must be approved by the Mathematics faculty advisor. Students may take MATH 2121 to fulfill this requirement.

2 CIS 3296 is a prerequisite for CIS 4398 and should be taken as a 3000+ Computer & Information Science elective if you plan to take CIS 4398 as the capstone course. Computer & Information Science electives must be 3000 or higher, and they must be approved by the Computer & Information Science faculty advisor.

Accelerated Programs

Students may opt to pursue an accelerated +1 program, enabling them to complete both a bachelor's degree and master's degree in less time than the traditional route.

The following accelerated programs may be of interest to students in the Mathematics and Computer Science BS:

College of Science and Technology

- Bioinnovation PSM
- Computational Data Science MS