

Mathematics & Computer Science, B.S.

Learn more about the Bachelor of Science in Mathematics and Computer Science (<https://www.temple.edu/academics/degree-programs/mathematics-and-computer-science-major-st-macs-bs>).

This program 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.

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Bachelor of Science

Summary of Requirements for the Degree

- University Requirements (123 total s.h.)
 - MATH 0701 (4 s.h.) and/or ENG 0701 (4 s.h.), if required by placement testing.
 - All Temple students must take a minimum of two writing-intensive courses at Temple as part of their major. Following is a list of courses that can be used to satisfy the writing-intensive requirement:

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

- Students must complete the General Education (GenEd) requirements.
 - See the General Education (<http://bulletin.temple.edu/undergraduate/general-education>) section of the *Undergraduate Bulletin* for the GenEd curriculum.
 - Students who complete CST majors typically receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
 - Students must satisfy general Temple University residency requirements (<http://bulletin.temple.edu/undergraduate/academic-policies/academic-residency-requirements>).
- College Requirements

- 90 credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).
- 45 Upper Level (2000+) credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).

3. Major Requirements for Bachelor of Science (72-73 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 or CIS 1968	Program Design and Abstraction Honors Program Design and Abstraction	4
CIS 1166 or CIS 1966	Mathematical Concepts in Computing I Honors Mathematical Concepts in Computing I	4
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 3238 3000+ CIS Elective ¹	Software Design (S)	
Mathematics courses		
MATH 1041 or MATH 1941	Calculus I Honors Calculus I	4
MATH 1042 or MATH 1942	Calculus II Honors Calculus II	4
MATH 2043 or MATH 2943	Calculus III Honors Calculus III	4
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 or MATH 3098	Introduction to Modern Algebra Modern Algebra	3
MATH 3137 or MATH 3043	Real & Complex Analysis I (F) Numerical Analysis I	3
Select one of the following:		3
MATH 3138 3000+ MATH Elective ²	Real & Complex Analysis II (S)	
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 ³	
CIS 4398	Projects in Computer Science ³	
MATH 4096	Senior Problem Solving ⁴	
Total Credit Hours		72-73

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

- 1 Must be approved by Computer & Information Science faculty advisor.
- 2 Must be approved by Mathematics faculty advisor.
- 3 CIS 3238 is a prerequisite for CIS 4397 and CIS 4398 and should be taken as a 3000+ Computer & Information Science elective if you plan to take CIS 4397 or CIS 4398 as the capstone course.
- 4 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.

Calculation of Major GPA

Courses listed under the major requirements for the degree will be included in the calculation of the major GPA. Courses that could not apply toward the major as an elective or required course would not be counted in the calculation of the major GPA. This would include MATH 1022, for example.

Distinction in Major

To graduate with Distinction in Mathematics & Computer Science, a student should meet the following requirements:

- At the time of graduation, the student's overall grade point average (GPA), including all college-level courses, must be at least 3.50.
- Students must have a 3.50 or higher grade point average in the 3000+ level Computer Science courses.
- Students must have a GPA of 3.50 or higher in their 3000+ level Mathematics courses.
- Students must complete MATH 3098 and one of the following two-semester analysis sequences:

Code	Title	Credit Hours
MATH 3043 & MATH 3044	Numerical Analysis I and Numerical Analysis II	6-7
MATH 3137 & MATH 3138	Real & Complex Analysis I and Real & Complex Analysis II	6
MATH 3141 & MATH 3142	Advanced Calculus I and Advanced Calculus II	6

Suggested Academic Plan

Bachelor of Science in Mathematics & Computer Science

Requirements for New Students starting in the 2018-2019 Academic Year

Year 1		Credit Hours
Fall		
CIS 1068 or 1968	Program Design and Abstraction	4
MATH 1041 or 1941	Calculus I	4

General Education/Elective Credits		7
	Term Credit Hours	15
Spring		
CIS 1166 or 1966	Mathematical Concepts in Computing I	4
MATH 1042 or 1942	Calculus II	4
General Education/Elective Credits		8
	Term Credit Hours	16
Year 2		
Fall		
CIS 2168	Data Structures	4
MATH 2043 or 2943	Calculus III	4
Select one of the following:		3-4
MATH 2101	Linear Algebra	
MATH 2103	Linear Algebra with Computer Lab (F)	
General Education/Elective Credits		4-3
	Term 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
General Education/Elective Credits		5
	Term Credit Hours	16
Year 3		
Fall		
CIS 3207	Introduction to Systems Programming and Operating Systems	4
Select one of the following:		3
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	
CHEM 1951 & CHEM 1953	Honors General Chemical Science 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)	
General Education/Elective Credits		4
	Term Credit Hours	15
Spring		
CIS 3223	Data Structures and Algorithms	3
Select one of the following:		3
MATH 3138	Real Complex Analysis II (S)	
3000+ MATH Elective ¹		
Select one of the following:		4
CHEM 1032 & CHEM 1034	General Chemistry II	
CHEM 1952 & CHEM 1954	Honors General Chemical Science 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)	

General Education/Elective Credits		5
	Term Credit Hours	15
Year 4		
Fall		
Select one of the following:		4
CIS 3238	Software Design (S)	
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]	
General Education/Elective Credits		5
	Term Credit Hours	15
Spring		
Select one of the following:		3
CIS 4397	Independent Research in Computer Science [WI] ²	
CIS 4398	Projects in Computer Science [WI] ²	
MATH 4096	Senior Problem Solving [WI] ¹	
General Education/Elective Credits		13
	Term Credit Hours	16
	Total Credit Hours:	123

Code	Title	Credit Hours
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(F) - Fall only course

(S) - Spring only course

¹ Mathematics electives must be 3000 or higher, and they must be approved by the Mathematics faculty advisor. 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.

² Computer & Information Science electives must be 3000 or higher, and they must be approved by the Computer & Information Science faculty advisor. CIS 3238 is a prerequisite for CIS 4397 and CIS 4398 and should be taken as a 3000+ Computer & Information Science elective if you plan to take CIS 4397 or CIS 4398 as the capstone course.