

Mathematics with Teaching BS

Overview

The Department of Mathematics prepares students for careers, graduate study and professional programs requiring solid mathematical, quantitative or analytical skills.

The **Bachelor of Science in Mathematics with Teaching** is part of Temple's innovative "TUteach" secondary education teacher-training program. The BS in Mathematics with Teaching provides broad training in mathematics and prepares students for a career in secondary school teaching or an entry level position in a mathematical field. The education courses in this major include supervised teaching in school district classrooms and emphasize inquiry-based approaches to learning. Students in the BS in Mathematics with Teaching degree program become *eligible* for a Pennsylvania teacher certification when they complete all the requirements for the degree that include theoretical and practical courses in education specifically designed for science and mathematics majors. In order to be *recommended* for Pennsylvania teacher certification, students must graduate with:

1. a BS with Teaching degree and
2. meet GPA and testing requirements of the state of Pennsylvania.

Students will be scheduled once each semester to meet with the TUteach advisor to ensure that students have knowledge of academic programming, internships opportunities and testing options that include test preparation. The state of Pennsylvania has specific candidacy requirements. The TUteach advisor will also help the students complete and submit the candidacy documents. All students joining the program in their freshman year must complete the PAPA examination or acquire the PAPA waiver within their first 72 credits. Transfer students, from within Temple and those from other institutions, will build a tailored program with the academic and testing benchmarks structured for efficient degree completion with the TUteach advisor. Students are encouraged to complete the appropriate PRAXIS II examination prior to student teaching. Students are encouraged to take internship courses to expand their teaching portfolio or select elective courses that will extend their knowledge of science and teaching practice.

Campus Location: Main

Program Code: ST-MATC-BS

Distinction in Major

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

- achieve a minimum 3.25 cumulative GPA;
- achieve a minimum 3.50 major GPA;
- achieve a minimum 3.50 in the Mathematics courses required for the major;
- successfully complete MATH 3141, MATH 3142 and MATH 4051 instead of MATH 3137 and MATH 3138;
- successfully complete MATH 3098 instead of MATH 3096;
- achieve a minimum 3.50 GPA in the following courses:
 - MATH 3098
 - MATH 3141
 - MATH 3142
 - MATH 4051
 - Any additional course from the following:
 - MATH 3043
 - MATH 3044
 - MATH 3101; and
- achieve a minimum 3.90 GPA in the following courses:
 - MAES 2189 or SCTC 4385
 - MAES 4189 or SCTC 4485
 - EDUC 4388
 - EDUC 4802.

Undergraduate Contact Information

Susan Varnum, Program Director and Professor of Chemistry
Senior Associate Dean for Undergraduate Affairs and Science Education
College of Science and Technology
Gladfelter Hall, Room 629
215-204-6390 or 215-204-4073

susan.varnum@temple.edu

Kathleen McKinley, Master Teacher/Faculty Advisor (Mathematics Education) and Instructor of Practice
College of Science and Technology
Gladfelter Hall, Room 631
215-204-9252
kathleen.mc.kinley@temple.edu

Kenneth Ruff, TUTEACH Faculty Advisor, Academic Programs Director, and Assistant Professor of Practice
College of Science and Technology
Gladfelter Hall, Room 656
215-204-3628
kruff@temple.edu

Brian Rider, Mathematics Department Chair
Wachman Hall, Room 638
215-204-7841
mathematics@temple.edu

Maria Lorenz, Mathematics Department Vice Chair
Wachman Hall, Room 610
215-204-7852
mathadvising@temple.edu

Boris Datskovsky, Mathematics Department Director of Undergraduate Studies
Wachman Hall, Room 632
215-204-7847
mathadvising@temple.edu

Learn more about the Bachelor of Science in Mathematics with Teaching.

These requirements are for students who matriculated in academic year 2023-2024. Students who matriculated prior to fall 2023 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 (124 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
MATH 3096	Introduction to Modern Algebra	
MATH 3098	Modern Algebra	
MATH 4096	Senior Problem Solving	
MGSE 3796	Differentiated Literacy Instruction in the Disciplines (grades 7-12)	

- Students must complete the General Education (GenEd) requirements.
 - See the General Education section of the *Undergraduate Bulletin* for the GenEd curriculum.
 - Students who complete TUTEACH majors receive a waiver for 1 Human Behavior (GB), 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 (90-92 s.h.)¹

At least 9 courses required for the major must be completed at Temple. At least 7 Math courses and 3 Education courses must be completed at Temple. Though not required, students are strongly encouraged to increase training and field work experience by enrolling in SCTC 1385, SCTC 2385, or SCTC 2389. Students will also benefit from directed laboratory projects offered through SCTC 3185. These courses are offered every semester.

Code	Title	Credit Hours
Computer Programming		
Select one of the following:		3-4
CIS 1051	Introduction to Problem Solving and Programming in Python	
or CIS 1951	Honors Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
CIS 1068	Program Design and Abstraction	
or CIS 1968	Honors Program Design and Abstraction	
MATH 1033 & MATH 1034	Computing in MATLAB and Applications in MATLAB	
Mathematics		
MATH 1041	Calculus I	4
or MATH 1941	Honors Calculus I	
MATH 1042	Calculus II	4
or MATH 1942	Honors Calculus II	
MATH 2021	Functions and Modeling (S)	3
MATH 2043	Calculus III	4
or MATH 2943	Honors Calculus III	
MATH 2061	Euclidean Geometry (S)	3
MATH 2101	Linear Algebra	3-4
or MATH 2103	Linear Algebra with Computer Lab	
MATH 2111	Basic Concepts of Math	3
MATH 3003	Theory of Numbers	3
MATH 3031	Probability Theory I	3
MATH 3096	Introduction to Modern Algebra	3
MATH 3137	Real & Complex Analysis I (F)	3
MATH 3138	Real & Complex Analysis II (S)	3
MATH 4096	Senior Problem Solving	3
One Mathematics elective at the 3000 level or above ²		3
Physics		
Select one of the following:		4
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)	
Select one of the following:		4
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)	
College of Science & Technology		
SCTC 1013	Elements of Data Science for the Physical and Life Sciences	3
SCTC 1389	Step 1 and 2: Inquiry-Based Lesson Design in Science and Mathematics Modified for English Learners	2
SCTC 3001	History of Science	3
SCTC 3312	Coding STEM Lessons ³	1
Education		
EDUC 2179	Knowing and Learning in Mathematics and Science	3
EDUC 4388	TUteach Apprenticeship Teaching	4

EDUC 4802	TUteach Apprentice Teaching Seminar	3
MGSE 2189 or SCTC 3485	Classroom Interactions (S) Science and Mathematics in the Classroom	3
MGSE 3796	Differentiated Literacy Instruction in the Disciplines (grades 7-12)	3
MGSE 4189 or SCTC 4485	Project-Based Instruction (F) Integrating STEM Practice in Diverse Teaching Environments	3
SPED 2231	Introduction to Special Education	3
Research Methods		
BIOL/CHEM/EES/PHYS 3091	Research Methods	3
Total Credit Hours		90-92

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

- 1
- The certification requirements need to meet Pennsylvania Department of Education standards and are subject to change. All students are strongly recommended to check with the TUteach Advisor in the College of Science and Technology to affirm the requirements that pertain to their specific major. In addition, students should check the *Undergraduate Bulletin* web site for the most current information about these programs, or the TUteach web site. It is also recommended that all students meet with an advisor before enrolling in classes specific to these majors and leading to certification as a teacher. This is to assure that a candidate's intended program of study will be compatible with the new requirements.
- 2
- MATH 2041, MATH 2941, MATH 2045, or MATH 2121 may be used to fulfill the Mathematics elective at the 3000 level or above.
- 3
- All students are required to take a minimum of one credit.

Suggested Academic Plan

Bachelor of Science in Mathematics with Teaching

Suggested Plan for New Students Starting in the 2023-2024 Academic Year

Year 1		Credit Hours
Fall		
MATH 1041 or MATH 1941	Calculus I or Honors Calculus I	4
Select one of the following:		3-4
CIS 1051 or CIS 1951	Introduction to Problem Solving and Programming in Python or Honors Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
CIS 1068 or CIS 1968	Program Design and Abstraction or Honors Program Design and Abstraction	
MATH 1033 & MATH 1034	Computing in MATLAB and Applications in MATLAB	
SCTC 1001	CST First Year Seminar	1
SCTC 1013	Elements of Data Science for the Physical and Life Sciences	3
SCTC 1389	Step 1 and 2: Inquiry-Based Lesson Design in Science and Mathematics Modified for English Learners	2
GenEd Breadth Course		3
Elective		1-0
Credit Hours		17
Spring		
MATH 1042 or MATH 1942	Calculus II or Honors Calculus II	4
Select one of the following:		4
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)	
EDUC 2179	Knowing and Learning in Mathematics and Science	3
ENG 0802 or ENG 0812 or ENG 0902	Analytical Reading and Writing or Analytical Reading and Writing: ESL or Honors Writing About Literature	4
Credit Hours		15
Year 2		
Fall		
MATH 2043 or MATH 2943	Calculus III or Honors Calculus III	4
MATH 2101 or MATH 2103	Linear Algebra or Linear Algebra with Computer Lab	3-4
Select one of the following:		4
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)	
SPED 2231	Introduction to Special Education	3
Elective		3-2
Credit Hours		17
Spring		
MATH 2021	Functions and Modeling (S)	3
MATH 2061	Euclidean Geometry (S)	3
MATH 2111	Basic Concepts of Math	3
IH 0851 or IH 0951	Intellectual Heritage I: The Good Life or Honors Intellectual Heritage I: The Good Life	3
GenEd Breadth Course		3
Credit Hours		15
Year 3		
Fall		
MATH 3003	Theory of Numbers	3
MATH 3137	Real & Complex Analysis I (F)	3
SCTC 3001	History of Science	3
MGSE 3796	Differentiated Literacy Instruction in the Disciplines (grades 7-12)	3
IH 0852 or IH 0952	Intellectual Heritage II: The Common Good or Honors Intellectual Heritage II: The Common Good	3
Elective		2
Credit Hours		17
Spring		
MATH 3096	Introduction to Modern Algebra	3
MATH 3138	Real & Complex Analysis II (S)	3
Select one of the following:		3
BIOL 3091	Research Methods (S)	
CHEM 3091	Research Methods (S)	
EES 3091	Research Methods (S)	
PHYS 3091	Research Methods (S)	
Select one of the following:		3
MGSE 2189	Classroom Interactions (S)	
SCTC 3485	Science and Mathematics in the Classroom	
GenEd Breadth Course		3

Elective		1
Credit Hours		16
Year 4		
Fall		
MATH 3031	Probability Theory I	3
MATH 4096	Senior Problem Solving	3
3000+ Math Elective ¹		3
SCTC 3312	Coding STEM Lessons ²	1
Select one of the following:		3
MGSE 4189	Project-Based Instruction (F)	
SCTC 4485	Integrating STEM Practice in Diverse Teaching Environments	
GenEd Breadth Course		3-4
Elective		1-0
Credit Hours		17
Spring		
EDUC 4388	TUteach Apprentice Teaching	4
EDUC 4802	TUteach Apprentice Teaching Seminar	3
Elective		3
Credit Hours		10
Total Credit Hours		124

Code	Title	Credit Hours
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(F) - Fall only course

(S) - Spring only course

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MATH 2041, MATH 2941, MATH 2045, or MATH 2121 may be used to fulfill the Mathematics elective at the 3000 level or above.

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All students are required to take a minimum of one credit.