

# Mathematics - Teaching B.A.

## Mathematics - Teaching Major

The B.A. Mathematics - Teaching major requires a minimum of 120 total hours to graduate. This total includes UNIFI/General Education requirements, the Professional Experiences requirements, Educator Essentials requirements, and the following specified major requirements, to complete the minimum of 120 hours.

Both emphases in this major lead to endorsement #143: 5-12 Mathematics.

### Required

#### Mathematics Core:

STAT 1772	Introduction to Statistical Methods *	3
MATH 1420	Calculus I *	4
MATH 1421	Calculus II	4
MATH 2500	Linear Algebra for Applications	3

#### Mathematics Teaching Core:

MATH 1310	Technology for Secondary Mathematics Teachers	3
MATH 2313	Topics in Secondary Mathematics	3
MATH 2900	Discrete and Argumentative Mathematics	3
MATH 3600	Euclidean Geometry	3
MATH 3750	Statistics and Data Science for Secondary Teachers	3

Computer Programming: 3-4

#### Select one of the following:

CS ED 1320	Fundamentals of Programming	
CS 1120	Media Computation	
CS 1160	C/C++ Programming	
CS 1510	Introduction to Computing	

Select one of the following emphasis cores: 12-13

**Total Hours 44-46**

## Emphases

### Secondary Mathematics

#### Required:

MATH 3211	Algebra	3
MATH 3212	Introduction to Geometry and Measurement for K-8 Teachers	3
MATH 3213	Topics in Mathematics for Grades K-8	3

Electives (choose ONE of the following): 3

MATH 3214	Problem Solving in Mathematics for K-8 Teachers	
MATH 3305	Connections: University Mathematics and the Secondary Curriculum	

MATH 3530	Combinatorics	
MATH 4510/5510	Elementary Number Theory	
<b>Total Hours</b>		<b>12</b>

### Upper Secondary Mathematics

#### Required:

MATH 2422	Calculus III	4
MATH 3305	Connections: University Mathematics and the Secondary Curriculum	3
MATH 4500/5500	Modern Algebra I	3
Electives (choose ONE of the following): 3		
MATH 3530	Combinatorics	
MATH 3610/5610	Modern Geometries	
MATH 4420/5420	Advanced Calculus I	
MATH 4501/5501	Modern Algebra II	
MATH 4510/5510	Elementary Number Theory	
MATH 4615/5615	Geometric Transformations	

**Total Hours 13**

\* STAT 1772 has prerequisite of satisfactory score on ALEKS exam. MATH 1420 has prerequisite of satisfactory score on mathematics placement exam or subsequent remediation.

Notes: For departmental approval to student teach, a student in the program must satisfy the University requirements to student teach and the following specific departmental requirements:

1) Must earn a C- or better in: MATH 1420, MATH 1421, MATH 2500, MATH 2900, MATH 3600, STAT 1772 and course taken to satisfy the Computer Science requirements.

2) Must complete all of the courses in the major with a major grade point average of 2.50 or higher.

### Professional Experiences

#### Required:

EDUC 2343	Teaching Methods I: Secondary Mathematics *	3
EDUC 2443	Teaching Internship I: Secondary Mathematics	3
EDUC 3543/5543	Teaching Methods II: Secondary Mathematics *,**	3
EDUC 3643/5643	Teaching Internship II: Secondary Mathematics	3
EDUC 4138	Secondary School Teaching	12
<b>Total Hours</b>		<b>24</b>

\* A grade of C (2.00) or higher is required for all Methods courses.

\*\*Mathematics Teaching majors can count EDUC 3543/5543 Teaching Methods II: Secondary Mathematics for category 5 of Educator Essentials.

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### Educator Essentials

Required: \*

Select one of the following in each category:

#### Category 1: The Learner 3

EDPSYCH 1500	Reflections on Learning
EDPSYCH 2068	Development and Learning in Sociocultural Contexts

EDPSYCH 2100	Creativity and Higher Order Thinking in the Classroom
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SOCFOUND 2243	Rethinking the Learning Society: Education and Its Future(s)
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#### Category 2: Social Contexts of Learning 3

SOCFOUND 2119	Social & Cultural Foundations of Education
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SOCFOUND 2134	A Modern History of Education in the United States
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SOCFOUND 2334	Education Policy and Politics of Education
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TESOL 2015	Language Today
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#### Category 3: Education for All 3

KINES 4152	Adapted Physical Education
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SOCFOUND 3334	Education, Power, and Change
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SOCFOUND 3434	Social Movements and Education
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SPIE 3140	Interdisciplinary and Intersectional Study of Education for All
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SPIE 3150	Meeting the Needs of Diverse Learners in Classrooms
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TESOL 3710	Content Area Strategies for English Language Learners
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#### Category 4: The Classroom Environment 3

EDPSYCH 3200	Deeper Motivation and the Highly Engaged Classroom
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EDPSYCH 3300	Level Up: Gamified Learning Environments
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ECIE 4151	Early Childhood Curriculum Development and Organization
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RTNL 3360	Playful Learning and Project-Based Experiences: Techniques for Ed and Recreational Environments
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SOCFOUND 3219	Critical Perspectives on Technology and Education
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#### Category 5: Effective Pedagogy 3

ARTED 4600	Expressive Learning Assessment
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LRNTECH 3600	Technology, Pedagogy, and Learning in the Digital Age
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MEASRES 3510	Assessment for Learning
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TEACHING 3500	Effective Teaching through Differentiation, Technology and Assessment
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#### Category 6: The Professional Educator 3

ECIE 3149	Child, Family, School and Community Relationships
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SOCFOUND 3519	Teacher Leadership & Educational Change
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TEACHING 3177	Collaborative Partnerships for Educators
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**Total Hours 18**

\* A grade of C (2.00) or higher is required in each Educator Essentials course.

### Four-Year Plan

#### Mathematics Teaching: Secondary Mathematics, B.A.

This is a sample plan of study with a suggested sequencing of classes for the major. University electives may be applied to earn additional academic majors, minors, or certificates. Students should regularly meet with their academic advisor to plan their specific semester schedule to include UNIFI/General Education program and/or university elective hours required.

Course	Title	Hour
<b>Freshman</b>		
<b>Fall</b>		
TEACHING 2020	Introduction to Teaching: Exploring Options (or Approved 10 hour experience)	1
CS ED 1320	Fundamentals of Programming	3
MATH 1310	Technology for Secondary Mathematics Teachers	3
MATH 1420	Calculus I	4
UNIFI/General Education or University Electives		6
<b>Hours</b>		<b>17</b>
<b>Spring</b>		
MATH 1421	Calculus II	4
MATH 2313	Topics in Secondary Mathematics	3
Educator Essentials Courses		3
UNIFI/General Education or University Electives		4
<b>Hours</b>		<b>14</b>
<b>Sophomore</b>		
<b>Fall</b>		
MATH 3212	Introduction to Geometry and Measurement for K-8 Teachers	3
MATH 2900	Discrete and Argumentative Mathematics	3
Educator Essentials Course		3
UNIFI/General Education or University Electives		6
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
MATH 2500	Linear Algebra for Applications	3
STAT 1772	Introduction to Statistical Methods	3
EDUC 2343	Teaching Methods I: Secondary Mathematics	3
EDUC 2443	Teaching Internship I: Secondary Mathematics	3

UNIFI/General Education or University Electives		3
<b>Hours</b>		<b>15</b>
<b>Junior</b>		
<b>Fall</b>		
MATH 3750	Statistics and Data Science for Secondary Teachers	3
MATH 3211	Algebra	3
Educator Essentials Course		3
UNIFI/General Education or University Electives		6
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
MATH 3213	Topics in Mathematics for Grades K-8	3
MATH 3600	Euclidean Geometry	3
Educator Essentials Course		6
UNIFI/General Education or University Electives		3
<b>Hours</b>		<b>15</b>
<b>Senior</b>		
<b>Fall</b>		
EDUC 3543/5543	Teaching Methods II: Secondary Mathematics	3
EDUC 3643/5643	Teaching Internship II: Secondary Mathematics	3
Math Elective		3
UNIFI/General Education or University Electives		8
<b>Hours</b>		<b>17</b>
<b>Spring</b>		
EDUC 4138	Secondary School Teaching	12
<b>Hours</b>		<b>12</b>
<b>Total Hours</b>		<b>120</b>

### Mathematics Teaching: Upper Secondary Mathematics, B.A.

This is a sample plan of study with a suggested sequencing of classes for the major. University electives may be applied to earn additional academic majors, minors, or certificates. Students should regularly meet with their academic advisor to plan their specific semester schedule to include UNIFI/General Education program and/or university elective hours required.

Course	Title	Hour
<b>Freshman</b>		
<b>Fall</b>		
TEACHING 2020	Introduction to Teaching: Exploring Options (or Approved 10 hour experience)	1
CS ED 1320	Fundamentals of Programming	3
MATH 1310	Technology for Secondary Mathematics Teachers	3
MATH 1420	Calculus I	4
UNIFI/General Education or University Electives		6
<b>Hours</b>		<b>17</b>
<b>Spring</b>		
MATH 1421	Calculus II	4
MATH 2500	Linear Algebra for Applications	3
Educator Essentials Course		3
UNIFI/General Education or University Electives		4
<b>Hours</b>		<b>14</b>

<b>Sophomore</b>		
<b>Fall</b>		
MATH 2900	Discrete and Argumentative Mathematics	3
STAT 1772	Introduction to Statistical Methods	3
Educator Essentials Course		3
UNIFI/General Education or University Electives		6
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
MATH 2422	Calculus III	4
MATH 2313	Topics in Secondary Mathematics	3
EDUC 2343	Teaching Methods I: Secondary Mathematics	3
EDUC 2443	Teaching Internship I: Secondary Mathematics	3
UNIFI/General Education or University Electives		3
<b>Hours</b>		<b>16</b>
<b>Junior</b>		
<b>Fall</b>		
MATH 3750	Statistics and Data Science for Secondary Teachers	3
MATH 4500/5500	Modern Algebra I	3
Educator Essentials Course		3
UNIFI/General Education or University Electives		6
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
MATH 3305	Connections: University Mathematics and the Secondary Curriculum	3
MATH 3600	Euclidean Geometry	3
Educator Essentials Courses		6
UNIFI/General Education or University Electives		3
<b>Hours</b>		<b>15</b>
<b>Senior</b>		
<b>Fall</b>		
EDUC 3543/5543	Teaching Methods II: Secondary Mathematics	3
EDUC 3643/5643	Teaching Internship II: Secondary Mathematics	3
Math Elective		3
UNIFI/General Education or University Electives		7
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
EDUC 4138	Secondary School Teaching	12
<b>Hours</b>		<b>12</b>
<b>Total Hours</b>		<b>120</b>

### Learning Outcomes

#### Mathematics - Teaching, B.A.

- **Goal 1:** Social Contexts of Mathematics Teaching and Learning - Well-prepared beginning teachers of mathematics realize that the social, historical, and institutional contexts of mathematics affect teaching and learning and know about and are committed to their critical roles as advocates for each and every student.
- **Goal 2:** Knowledge of Students as Learners of Mathematics - Well-prepared beginning teachers of mathematics have foundational understandings of students' mathematical knowledge, skills, and dispositions. They also know how these understandings can contribute to effective teaching and are committed to

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expanding and deepening their knowledge of students as learners of mathematics.

- **Goal 3:** Pedagogical Knowledge and Practices for Teaching Mathematics - Well-prepared beginning teachers of mathematics have foundations of pedagogical knowledge, effective and equitable mathematics teaching practices to support students' sense making, understanding, and reasoning. Additionally, well-prepared beginning teachers can develop effective assessment plans.
- **Goal 4:** Knowledge of Mathematics Well-prepared beginning teachers of mathematics possess robust knowledge of mathematical and statistical concepts that underlie what they encounter in teaching. They engage in appropriate mathematical and statistical practices and support their students in doing the same.

## Policies

### Notes:

1. A student majoring or minoring in mathematics, who has a grade point average of less than 2.25 in all departmental courses used for that major or minor may not apply a departmental course in which a grade of less than C- is earned to her/his major or minor.
2. A student with a major within the Department of Mathematics may declare a second major and/or a certificate within the Department. Interested students should work closely with an advisor.
3. The declaration of both a major and a minor with the Department of Mathematics is limited to the following. Interested students should work closely with an advisor.
  - A student with any Mathematics major may declare the interdisciplinary Data Science Minor.
  - A student with the Mathematics Major or the Mathematics-Teaching Major may declare the Statistics emphasis of the Statistics and Actuarial Science Minor.

## Related Programs

- Mathematics B.A.
- Mathematics M.A.