

# Mathematics B.S./ Secondary Education M.Ed.

## Program Requirements

Catalog Department Overview # (<https://catalog.uaf.edu/academic-departments/mathematics-statistics/>)

## Minimum Requirements for Mathematics B.S./Secondary Education M.Ed.: 138 credits

### General University Requirements

Complete the general university requirements. (<https://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext>)

### General Education Requirements

Complete the general education requirements. 36-40  
(<https://catalog.uaf.edu/bachelors/#generaleducationrequirementstext>)

As part of the general education requirements, complete the following:

MATH F251X	Calculus I
------------	------------

### B.S. Degree Requirements

Complete the B.S. degree requirements. 16  
(<https://catalog.uaf.edu/bachelors/#bachelorofsciencetext>)

As part of the B.S. requirements, complete the following:

MATH F252X	Calculus II
PHYS F123X	College Physics I
and PHYS F124X	and College Physics II
or PHYS F211X	General Physics I
and PHYS F212X	and General Physics II

### Undergraduate Mathematics Program Requirements

Complete the following:

ED F110	Becoming a Teacher in the 21st Century	1
EDSC F407	Developing Literacy in the Content Areas	3
EDSC F415	Foundations of Modern Educational Practice	3
MATH F253X	Calculus III	4
MATH F265	Introduction to Mathematical Proofs	3
MATH F305	Geometry	3
MATH F314	Linear Algebra	3
MATH F401	Introduction to Real Analysis	3
MATH F405	Abstract Algebra	3
MATH F490	Senior Seminar <sup>1</sup>	3
STAT F300	Statistics	3

Complete one of the following: 3-4

MATH F371	Probability
STAT F401	Regression and Analysis of Variance

Complete one of the following: 3

MATH F307	Discrete Mathematics
MATH F320	Topics in Combinatorics

Credits

MATH F321	Number Theory	
Complete one of the following:		3
CS F103	Introduction to Computer Programming	
CS F201	Computer Science I	
Complete one of the following:		3
MATH F410	Introduction to Complex Analysis	
MATH F302	Differential Equations	
MATH F426	Numerical Analysis	
MATH F460	Mathematical Modeling	
Complete an additional MATH or STAT course at the F300-level or higher		3
<b>Electives</b>		
General Electives		4-9
<b>Total Credits</b>		<b>108</b>

<sup>1</sup> Fulfills the baccalaureate capstone requirement.

**Note:** All mathematics majors must have an advisor from the Department of Mathematics and Statistics.

**Note:** At least 12 approved mathematics credits at the F300 level or above must be taken while in residence on the Fairbanks campus.

## Graduate Program Requirements

Credits

### General University Requirements

Complete the graduate general university requirements.  
(<https://catalog.uaf.edu/masters/#gurmastersdegreestext>)

### Master's Degree Requirements

Complete the master's degree requirements. (<https://catalog.uaf.edu/masters/#typesofmastersdegrees>)

### Graduate Secondary Education Program Requirements

Complete the following:

ED F601	Introduction to Applied Social Science Research	3
EDSC F657	Multicultural Education and School-community Relations	3
EDSC F658	Classroom Organization and Management	3
EDSC F687	Alaska: Resources, People and Perspectives	3
EDSE F622	Curriculum, Management and Strategies II: High Incidence	3

*State of Alaska Praxis II test in Mathematics. The scores must meet or exceed the required score set by the State of Alaska. <sup>2</sup>*

*During the Internship Year*

Complete the following:

EDSC F633	Mathematics Secondary Instruction and Assessment	3
EDSC F642	Technology Applications in Education I	1
EDSC F643	Technology Application in Education II	2
EDSC F671	Secondary and Art K-12 Teaching: School Internship I and Seminar	3
EDSC F672	Secondary Teaching: School Internship II and Seminar	6

### Options

Complete one of the following:	0-9
Thesis Option	
Project Option	
Comprehensive Exam Option	
<b>Total Credits</b>	<b>30-39</b>

<sup>2</sup> The Praxis II exam must be passed before the Internship Year.

## Options

### Thesis Option

Complete the following:	<b>Credits</b>
ED/CCS F603 Field Study Research Methods	3
or ED/CCS F604 Documenting Indigenous Knowledge	
ED F699 Thesis	6
<b>Total Credits</b>	<b>9</b>

### Project Option

Complete the following:	<b>Credits</b>
ED/CCS F603 Field Study Research Methods	3
or ED/CCS F604 Documenting Indigenous Knowledge	
ED F698 Non-thesis Research/Project	3
<b>Total Credits</b>	<b>6</b>

### Comprehensive Exam Option

Complete the following:	<b>Credits</b>
Comprehensive examination	0
<b>Total Credits</b>	<b>0</b>

## Admission Requirements

Catalog Department Overview # (<https://catalog.uaf.edu/academic-departments/mathematics-statistics/>)

## Admission Requirements

Complete the following admission requirements:

- Current admission into a baccalaureate degree program
- At least a 3.0 cumulative GPA
- Completion of 24 credits in the undergraduate major program requirements
- Permission of the School of Education, which requires submission of the following:
  - Three current letters of reference that address qualifications and potential as a teacher.
  - A vitae/resume.
  - A personal statement of 1,200-1,500 words explaining your motivation for becoming a teacher. Describe how your academic qualifications and work experiences have prepared you for a career in teaching. Elaborate on your personal strengths, including your ability to work collaboratively with others. Describe your experiences with adolescents in instructional and supervisory capacities.

Explain why you believe you can help young people of all cultures be successful in school.

- Send the following scores directly to the School of Education:
  - Passing scores on an Alaska Department of Education and Early Development (EED) approved basic competency exam (<http://education.alaska.gov/TeacherCertification/praxis.html>).
  - Secondary faculty will interview applicants as part of the admission process.
  - Junior standing

## Roadmaps

Catalog Department Overview # (<https://catalog.uaf.edu/academic-departments/mathematics-statistics/>)

Roadmaps provide suggested semester-by-semester study plans for programs and are based on full-time enrollment, unless otherwise specified.

- This roadmap should be used in conjunction with regular academic advising sessions. All students are encouraged to meet with their advisor or mentor each semester.
- Certain courses and milestones must be completed in the specified semester to ensure on-time graduation.
- Transfer credits may affect the roadmap.
- Requirements, course availability, and sequencing may change.
- Courses marked with (\*) are recommended.

### Thesis Option

#### First Year

Fall	Credits Spring	Credits
LS F101X <sup>15</sup>	1 MATH F252X <sup>16</sup>	4
MATH F251X <sup>6</sup>	4 MATH F265 <sup>20</sup>	3
WRTG F111X <sup>1</sup>	3 WRTG F211X, F212X, F213X, or F214X <sup>1</sup>	3
General Education Requirement - Arts	3 General Education Requirement - Social Sciences	3
General Education Requirement - Natural Sciences	4	
	<b>15</b>	<b>13</b>

#### Second Year

Fall	Credits Spring	Credits
CS F103 or F201 <sup>20</sup>	3 COM F121X, F131X, or F141X <sup>1</sup>	3
MATH F253X <sup>20</sup>	4 ED F110 <sup>20</sup>	1
STAT F300 <sup>20</sup>	3 MATH F314 <sup>20</sup>	3
Complete one of the following: <sup>17</sup>	4 General Education Requirement - Humanities	3
PHYS F123X	Complete one of the following: <sup>17</sup>	4
PHYS F211X (*)	PHYS F124X	
	PHYS F212X (*)	
	<b>14</b>	<b>14</b>

**Third Year**

<b>Fall</b>	<b>Credits Spring</b>	<b>Credits</b>
EDSC F415 <sup>20</sup>	3 MATH F305	3
General Education Requirement - Social Sciences	3 General Education Requirement - Natural Sciences	4
Degree Requirement - Alaska Native-themed	3 General Education Requirement - Additional Arts, Humanities or Social Sciences	3
Program Elective	3 Degree Requirement - Ethics	3
Complete one of the following: <sup>20</sup>	3 Complete one of the following: <sup>20</sup>	3
MATH F302 (*)	MATH F307 (*)	
MATH F410	MATH F320	
MATH F426	MATH F321	
MATH F460		
	<b>15</b>	<b>16</b>

**Fourth Year**

<b>Fall</b>	<b>Credits Spring</b>	<b>Credits</b>
ED F601 <sup>20</sup>	3 EDSC F657 <sup>20</sup>	3
EDSC F407 <sup>20</sup>	3 EDSC F687 <sup>20</sup>	3
EDSC F658 <sup>20</sup>	3 EDSE F622 <sup>20</sup>	3
MATH F371 or STAT F401 <sup>20</sup>	3-4 MATH F405 <sup>20</sup>	3
MATH F401 <sup>20</sup>	3 MATH F490 <sup>20</sup>	3
	Praxis II Exam	
	<b>15-16</b>	<b>15</b>

**Fifth Year**

<b>Fall</b>	<b>Credits Spring</b>	<b>Credits</b>
ED F603 or F604 <sup>20</sup>	3 ED F699 <sup>18</sup>	3
ED F699 <sup>18</sup>	3 EDSC F643 <sup>20</sup>	2
EDSC F633 <sup>20</sup>	3 EDSC F672 <sup>20</sup>	6
EDSC F642 <sup>20</sup>	1	
EDSC F671 <sup>20</sup>	3	
	<b>13</b>	<b>11</b>

**Total Credits 141-142****Footnote Definitions**

<b>General Education Requirements</b>	<b>Degree Requirements</b>	<b>Program &amp; Other Requirements</b>
1—Communication	8—Alaska Native-themed	20—Program Requirement
2—Arts	9—Communication	21—Capstone Requirement
3—Humanities	10—Computation	22—Concentration Course
4—Social Sciences	11—Ethics	23—General Elective
5—Additional Arts, Humanities or Social Sciences	12—Humanities	24—Minor Course
6—Mathematics	13—Human Relations	25—Upper Division
7—Natural Sciences	14—Humanities or Social Sciences	26—Program Elective

15—Library & Information Research
16—Mathematics
17—Natural Sciences
18—Other
19—Social Sciences

**Project Option****First Year**

<b>Fall</b>	<b>Credits Spring</b>	<b>Credits</b>
LS F101X <sup>15</sup>	1 MATH F252X <sup>16</sup>	4
MATH F251X <sup>6</sup>	4 MATH F265 <sup>20</sup>	3
WRTG F111X <sup>1</sup>	3 WRTG F211X, F212X, F213X, or F214X <sup>1</sup>	3
General Education Requirement - Arts	3 General Education Requirement - Social Sciences	3
General Education Requirement - Natural Sciences	4	
	<b>15</b>	<b>13</b>

**Second Year**

<b>Fall</b>	<b>Credits Spring</b>	<b>Credits</b>
CS F103 or F201 <sup>20</sup>	3 COM F121X, F131X, or F141X <sup>1</sup>	3
MATH F253X <sup>20</sup>	4 ED F110 <sup>20</sup>	1
STAT F300 <sup>20</sup>	3 MATH F314 <sup>20</sup>	3
Complete one of the following: <sup>17</sup>	4 General Education Requirement - Humanities	3
PHYS F123X	Complete one of the following: <sup>17</sup>	4
PHYS F211X (*)	PHYS F124X	
	PHYS F212X (*)	
	<b>14</b>	<b>14</b>

**Third Year**

<b>Fall</b>	<b>Credits Spring</b>	<b>Credits</b>
EDSC F415 <sup>20</sup>	3 MATH F305 <sup>20</sup>	3
General Education Requirement - Social Sciences	3 General Education Requirement - Additional Arts, Humanities or Social Sciences	3
Degree Requirement - Alaska Native-themed	3 General Education Requirement - Natural Sciences	4
Program Elective	3 Degree Requirement - Ethics <sup>25</sup>	3
Complete one of the following: <sup>20</sup>	3 Complete one of the following: <sup>20</sup>	3
MATH F302 (*)	MATH F307 (*)	
MATH F410	MATH F320	
MATH F426	MATH F321	
MATH F460		
	<b>15</b>	<b>16</b>

**Fourth Year**

Fall	Credits Spring	Credits
ED F601 <sup>20</sup>	3 EDSC F657 <sup>20</sup>	3
EDSC F407 <sup>20</sup>	3 EDSC F687 <sup>20</sup>	3
EDSC F658 <sup>20</sup>	3 EDSE F622 <sup>20</sup>	3
MATH F371 or STAT F401 <sup>20</sup>	3-4 MATH F405 <sup>20</sup>	3
MATH F401 <sup>20</sup>	3 MATH F490 <sup>20</sup>	3
Praxis II Exam		
<b>15-16</b>		<b>15</b>

**Fifth Year**

Fall	Credits Spring	Credits
ED F603 or F604 <sup>20</sup>	3 ED F698 <sup>18</sup>	3
EDSC F633 <sup>20</sup>	3 EDSC F643 <sup>20</sup>	2
EDSC F642 <sup>20</sup>	1 EDSC F672 <sup>20</sup>	6
EDSC F671 <sup>20</sup>	3	
<b>10</b>		<b>11</b>

**Total Credits 138-139****Footnote Definitions**

General Education Requirements	Degree Requirements	Program & Other Requirements
1—Communication	8—Alaska Native-themed	20—Program Requirement
2—Arts	9—Communication	21—Capstone Requirement
3—Humanities	10—Computation	22—Concentration Course
4—Social Sciences	11—Ethics	23—General Elective
5—Additional Arts, Humanities or Social Sciences	12—Humanities	24—Minor Course
6—Mathematics	13—Human Relations	25—Upper Division
7—Natural Sciences	14—Humanities or Social Sciences	26—Program Elective
	15—Library & Information Research	
	16—Mathematics	
	17—Natural Sciences	
	18—Other	
	19—Social Sciences	

**Comprehensive Exam Option****First Year**

Fall	Credits Spring	Credits
LS F101X <sup>15</sup>	1 MATH F252X <sup>16</sup>	4
MATH F251X <sup>6</sup>	4 MATH F265 <sup>20</sup>	3
WRTG F111X <sup>1</sup>	3 WRTG F211X, F212X, F213X, or F214X <sup>1</sup>	3
General Education Requirement - Arts	3 General Education Requirement - Social Sciences	3
General Education Requirement - Natural Sciences	4 General Elective	3
<b>15</b>		<b>16</b>

**Second Year**

Fall	Credits Spring	Credits
CS F103 or F201 <sup>20</sup>	3 COM F121X, F131X, or F141X <sup>1</sup>	3
MATH F253X <sup>20</sup>	4 ED F110 <sup>20</sup>	1
STAT F300 <sup>20</sup>	3 MATH F314 <sup>20</sup>	3
General Education Requirement - Humanities	3 General Elective	3
Complete one of the following: <sup>17</sup>	4 Complete one of the following: <sup>17</sup>	4
PHYS F123X	PHYS F124X	
PHYS F211X (*)	PHYS F212X (*)	
<b>17</b>		<b>14</b>

**Third Year**

Fall	Credits Spring	Credits
EDSC F415 <sup>20</sup>	3 MATH F305 <sup>20</sup>	3
General Education Requirement - Social Sciences	3 General Education Requirement - Additional Arts, Humanities or Social Sciences	3
Degree Requirement - Alaska Native-themed	3 General Education Requirement - Natural Sciences	4
Program Elective	3 Degree Requirement - Ethics <sup>25</sup>	3
Complete one of the following: <sup>20</sup>	3 Complete one of the following: <sup>20</sup>	3
MATH F302 (*)	MATH F307 (*)	
MATH F410	MATH F320	
MATH F426	MATH F321	
MATH F460		
<b>15</b>		<b>16</b>

**Fourth Year**

Fall	Credits Spring	Credits
ED F601 <sup>20</sup>	3 EDSC F657 <sup>20</sup>	3
EDSC F407 <sup>20</sup>	3 EDSC F687 <sup>20</sup>	3
EDSC F658 <sup>20</sup>	3 EDSE F622 <sup>20</sup>	3
MATH F371 or STAT F401 <sup>20</sup>	3-4 MATH F405 <sup>20</sup>	3
MATH F401 <sup>20</sup>	3 MATH F490 <sup>20</sup>	3
Praxis II Exam		
<b>15-16</b>		<b>15</b>

**Fifth Year**

Fall	Credits Spring	Credits
EDSC F633 <sup>20</sup>	3 EDSC F643 <sup>20</sup>	2
EDSC F642 <sup>20</sup>	1 EDSC F672 <sup>20</sup>	6
EDSC F671 <sup>20</sup>	3	
<b>7</b>		<b>8</b>

**Total Credits 138-139**

**Footnote Definitions**

General Education Requirements	Degree Requirements	Program & Other Requirements
1–Communication	8–Alaska Native-themed	20–Program Requirement
2–Arts	9–Communication	21–Capstone Requirement
3–Humanities	10–Computation	22–Concentration Course
4–Social Sciences	11–Ethics	23–General Elective
5–Additional Arts, Humanities or Social Sciences	12–Humanities	24–Minor Course
6–Mathematics	13–Human Relations	25–Upper Division
7–Natural Sciences	14–Humanities or Social Sciences	26–Program Elective
	15–Library & Information Research	
	16–Mathematics	
	17–Natural Sciences	
	18–Other	
	19–Social Sciences	

**Learning Outcomes**

Catalog Department Overview # (<https://catalog.uaf.edu/academic-departments/mathematics-statistics/>)

Learning Outcomes are specific, measurable statements that define the knowledge and skills students will gain by the end of the program.

Graduates of this program will be able to:

- Attain mastery of core mathematical concepts at the baccalaureate level comparable to those at other institutions
- Have opportunities to develop the necessary skills to achieve their career goals in mathematics
- Understand and write formal mathematical arguments; they will demonstrate the ability to solve problems using mathematics and independently craft effective written explanations of mathematical material
- As applicants to be Master of Education candidates, have entry-level knowledge of education course content as described in professional, state, and institutional standards
- Demonstrate - through inquiry, critical analysis, and synthesis - in-depth understanding of knowledge in their fields as delineated in professional, state, and institutional standards
- Work with students, families, colleagues, and communities in ways that reflect the professional dispositions expected of professional educators as delineated in professional, state, and institutional standards
- Have in-depth knowledge of counseling course content as described in professional, state, and institutional standards
- Critique and reflect on their work within the context of student learning in K-12 or post-secondary classrooms