

MATHEMATICS, BACHELOR OF ARTS (728)

Program Coordinator

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This major is intended for students that are pursuing a basic math major for employment purposes and/or are interested in mathematics as part of a degree with two majors. Students pursuing teacher certification will also major in Science and Mathematics Education (774) (<https://www.wku.edu/skyteach/program.php>).

Concentrations

- Teacher Education (TCHR)
- General (Non-Teacher Certifiable) (MATN)

Program Requirements (39 hours)

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at www.wku.edu/registrar/degree_certification.php. (https://www.wku.edu/registrar/degree_certification.php)

Students who began WKU in the Fall 2014 and thereafter should review the Colonnade requirements located at: <https://www.wku.edu/colonnade/colonnaderequirements.php>. (<https://www.wku.edu/colonnade/colonnaderequirements.php>)

A major in mathematics provides a Bachelor of Arts degree and require a minimum of 39 semester hours for a general major with a minor or second major. Note: All mathematics courses listed as prerequisites for other mathematics courses must have been completed with a grade of "C" or better.

The general mathematics major (728) offers two options:

1. Teacher Certifiable Option (Secondary Mathematics Teacher Certification)
2. General (Non-teacher Certifiable) Option

Students in the general mathematics major (728) are required to satisfy a computational requirement as detailed within the options below.

Students must complete a minimum of 39 hours of mathematics with a minor or second major giving a total of at least 59 hours (53 unduplicated) with the following requirements.²

Core Mathematics Courses

All students in the general mathematics (728) major must complete the following core mathematics courses:

Code	Title	Hours
MATH 136	Calculus I	4
MATH 137	Calculus II	4
MATH 237	Multivariable Calculus	4
MATH 307	Introduction to Linear Algebra	3
MATH 310	Introduction to Discrete Mathematics	3
MATH 317	Introduction to Algebraic Systems	3

MATH 337	Elements of Real Analysis	3
MATH 498	Senior Seminar	3
Total Hours		27

Teacher Certifiable Option (TCHR)

Students in the Teacher Certifiable Option must complete a second major in Science and Mathematics Education (774).

In addition to the Core Mathematics Courses, students must complete 12 additional hours as follows:

Code	Title	Hours
Required Courses:³		
MATH 304	Functions, Applications and Explorations	3
MATH 323	Geometry I	3
MATH 421	Problem Solving for Secondary Teachers	3
STAT 301	Introductory Probability and Applied Statistics	3
Total Hours		12

Students in the Teacher Certifiable Option must satisfy a computational requirement by completing either CS 170 or CS 180.

General (Non-Teacher Certifiable) Option (MATN)

Students in the Non-Teacher Certifiable Option must complete a minor or second major giving a total of at least 59 hours (53 unduplicated).

In addition to the Core Mathematics Courses, students must complete 12 additional hours as follows:

Code	Title	Hours
Select six (6) hours from the following:¹		6
MATH 405	Numerical Analysis I	
MATH 406	Numerical Analysis II	
MATH 415	Algebra and Number Theory	
MATH 417	Algebraic Systems	
MATH 431	Intermediate Analysis I	
MATH 435	Partial Differential Equations	
MATH 439	Topology I	
MATH 450	Complex Variables	
MATH 470	Introduction to Operations Research	
MATH 473	Introduction to Graph Theory	
MATH 482	Probability and Statistics II	
Select six (6) hours from the following:¹		6
MATH 305	Introduction to Mathematical Modeling	
MATH 323	Geometry I	
MATH 331	Differential Equations	
MATH 370	Applied Techniques in Mathematics	
MATH 382	Probability and Statistics I	
MATH 398	Seminar ((up to 3 hours))	
MATH 405	Numerical Analysis I	

MATH 406	Numerical Analysis II
MATH 415	Algebra and Number Theory
MATH 417	Algebraic Systems
MATH 435	Partial Differential Equations
MATH 439	Topology I
MATH 450	Complex Variables
MATH 470	Introduction to Operations Research
MATH 475	Selected Topics in Mathematics ((up to 3 hours))
MATH 482	Probability and Statistics II
STAT 301	Introductory Probability and Applied Statistics

Total Hours **12**

Students in the General Option must satisfy a computational requirement by completing either CS 180, PHYS 316, PHYS 318 or STAT 330.

¹ Students may take certain 500-level mathematics courses for undergraduate credit with the approval of the Department Chair in place of courses listed in the elective sections of the General Option.

² Note: This major is not intended to prepare students adequately for graduate mathematics. Students intending to seek a graduate degree in mathematics should pursue major 528.

The Department of Mathematics offers a Joint Undergraduate Master's Program (JUMP) which provides academically outstanding students the opportunity to complete both an undergraduate Bachelor of Arts degree and a graduate Master of Science degree in an accelerated timeframe. The MS in Mathematics prepares students to be competitive applicants for admission into a Ph.D. program and/or for positions where strong research skills are needed. Contact the graduate program coordinator for additional information, see <https://catalog.wku.edu/graduate/science-engineering/mathematics/mathematics-ms/>

This JUMP program allows students to start working toward their MS in Mathematics with a concentration in General Mathematics, Computational Mathematics, or Mathematical Economics (Ref: 085) while completing their Bachelor of Arts degree in Mathematics (Ref: 528 and 728) or a Bachelor of Science degree in Mathematical Economics (Ref: 731). Undergraduate students admitted into JUMP may take graduate courses that count toward both undergraduate and graduate degrees. Up to 12 credit hours can be double-counted toward both degrees, and up to 15 hours of graduate courses can be taken while a student is completing the undergraduate degree. The key benefit of the JUMP program is that it allows students to earn a bachelor's and a master's degree in an accelerated timeframe. For more information, see <https://www.wku.edu/math/>.

To be considered for admission to the JUMP program to earn a BA in Mathematics (or a BS in Mathematical Economics) and a MS in Mathematics in an accelerated timeframe, a student must meet the following requirements:

- Be a Mathematics or a Mathematical Economics major (includes programs with reference numbers 528, 728, and 731);
- Have completed at least 60 hours total, with at least 24 hours earned at WKU;
- Have at least 15 or more credit hours remaining to complete the bachelor's degree;

- Have completed or be enrolled in 15 credit hours in Mathematics;
- Have a minimum cumulative undergraduate GPA of 3.25;
- And have one of the following:
 - 3.25 GPA in the Mathematics or Mathematical Economics major AND a grade of B or higher in at least one of the courses: MATH 307, MATH 310, MATH 317, MATH 337, MATH 439;
 - 3.0 GPA in the Mathematics or Mathematical Economics major AND a grade of B or higher in at least two of the courses: MATH 307, MATH 310, MATH 317, MATH 337, MATH 439.

Finish in Four Plans *Teacher Certifiable Option (TCHR)*

First Year			
Fall	Hours	Spring	Hours
MATH 136		4 MATH 137	4
SMED 101		3 SMED 102	3
CS 180 or CS 170		3-4 COMM 145	3
ENG 100		3 HIST 101 or HIST 102	3
Colonnade - Natural & Physical Sciences w/ lab		3-5 Colonnade - Social & Behavioral Science	3
16-19			16
Second Year			
Fall	Hours	Spring	Hours
MATH 307		3 MATH 310	3
MATH 237		4 MATH 304	3
SMED 310		3 SMED 320	3
ENG 200		3 Colonnade - Arts & Humanities	3
Colonnade - Natural & Physical Sciences w/ no lab		3 World Language Requirement or General Elective	3
16			15
Third Year			
Fall	Hours	Spring	Hours
MATH 317		3 MATH 337	3
MATH 323		3 MATH 421	3
SMED 340		3 STAT 301	3
Colonnade - Writing in the Disciplines		3 SMED 360	3
Colonnade - Local to Global		3 Colonnade - Systems	3
15			15
Fourth Year			
Fall	Hours	Spring	Hours
MATH 498		3 SMED 489	3
SMED 470		3 SEC 490	10
Colonnade - Social & Cultural		3	
General Elective		3	
General Elective		2-3	
14-15			13

Total Hours 120-124

General (Non-Teacher Certifiable) Option (MATN)

First Year			
Fall	Hours	Spring	Hours
MATH 136		4 MATH 137	4
Computational Requirement		3-4 General Elective	3
ENG 100		3 COMM 145	3

Colonnade - Natural & Physical Sciences w/ lab		3-5 HIST 101 or HIST 102		3
		Colonnade - Social & Behavioral Science		3
13-16				16
Second Year				
Fall	Hours	Spring	Hours	
MATH 307		3 MATH 310		3
MATH 237		4 Minor Elective		3
Minor Course		3 Colonnade - Social & Cultural		3
ENG 200		3 Colonnade - Arts & Humanities		3
Colonnade - Natural & Physical Sciences w/ no lab		3 World Language Requirement or General Elective		3
16				15
Third Year				
Fall	Hours	Spring	Hours	
MATH 317		3 MATH 337		3
Math upper-division Elective		3 Math upper-division Elective		3
Minor Course		3 Minor Course		3
Colonnade - Local to Global		3 Colonnade - Systems		3
Colonnade - Writing in the Disciplines		3 General Elective		3
15				15
Fourth Year				
Fall	Hours	Spring	Hours	
Math upper-division Elective		3 MATH 498		3
Minor Course		3 Math upper-division Elective		3
Minor Course or General Elective		3 Minor Course		3
General Elective		3 General Elective		3
General Elective		3 General Elective		3
15				15
Total Hours 120-123				