

# MATHEMATICS: MATHEMATICS FOR SECONDARY EDUCATION

## REQUIREMENTS

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The Mathematics Major for Secondary Education named option requires at least 8 distinct courses for at least 24 credits as described below. While a single courses may be used to fulfill more than one requirement, it will only contribute once to the total course/credit count. Finally, at most one course from each of the following groupings may be used to fulfill the minimum course and credit requirement (i.e.: minimum of 8 courses and at least 24 credits): Intro Linear Algebra (MATH 320, MATH 340, MATH 341, MATH 375), Intro Differential Equations (MATH 319, MATH 320 or MATH 376), and Intro Probability (MATH/STAT 309 or MATH/STAT 431).

Code	Title	Credits
<b>Requirements (minimum of eight distinct courses for at least 24 credits) <sup>1</sup></b>		
<i>Linear Algebra</i>		3-5
MATH 341	Linear Algebra	
or MATH 320	Linear Algebra and Differential Equations	
or MATH 340	Elementary Matrix and Linear Algebra	
or MATH 375	Topics in Multi-Variable Calculus and Linear Algebra	
<i>Intermediate Mathematics Requirement (complete at least one)</i>		0-3
MATH 341	Linear Algebra	
or MATH 375	Topics in Multi-Variable Calculus and Linear Algebra	
MATH 421	The Theory of Single Variable Calculus	
MATH 467	Introduction to Number Theory	
<i>Analysis (complete at least one)</i>		0-3
MATH 421	The Theory of Single Variable Calculus	
MATH 521	Analysis I	
<i>Modern Algebra (complete at least one)</i>		3
MATH 540	Linear Algebra II	
MATH 541	Modern Algebra	
<i>Probability or Combinatorics (complete at least one)</i>		3
MATH/STAT 431	Introduction to the Theory of Probability	
or MATH/STAT 309	Introduction to Probability and Mathematical Statistics I	
MATH 444	Graphs and Networks in Data Science	

MATH/ COMP SCI/ STAT 475	Introduction to Combinatorics	
MATH 531	Probability Theory	
<i>Statistics</i>		3
MATH/STAT 310	Introduction to Probability and Mathematical Statistics II	
or STAT 301	Introduction to Statistical Methods	
or STAT 312	Introduction to Theory and Methods of Mathematical Statistics II	
or STAT 324	Introduction to Statistics for Science and Engineering	
or ECON 310	Statistics: Measurement in Economics	
<i>History of Mathematics</i>		3
MATH/ HIST SCI 473	History of Mathematics	
<i>Geometry</i>		3
MATH 461	College Geometry I	
<i>Capstone course</i>		3
MATH/ CURRIC 471	Mathematics for Secondary School Teachers	
<i>Advanced mathematics</i>		0-6
Additional advanced course if needed to reach at least two math courses above 500		
MATH/ COMP SCI 513	Numerical Linear Algebra	
MATH/ COMP SCI 514	Numerical Analysis	
MATH 519	Ordinary Differential Equations	
MATH 521	Analysis I	
MATH 531	Probability Theory	
MATH 535	Mathematical Methods in Data Science	
MATH 540	Linear Algebra II	
MATH 541	Modern Algebra	
MATH 542	Modern Algebra	
MATH 551	Elementary Topology	
MATH 561	Differential Geometry	
MATH 567	Modern Number Theory	
MATH 570	Fundamentals of Set Theory	
MATH/ PHILOS 571	Mathematical Logic	
MATH 619	Analysis of Partial Differential Equations	
MATH 627	Introduction to Fourier Analysis	
MATH 629	Introduction to Measure and Integration	
MATH/ISY E/ OTM/STAT 632	Introduction to Stochastic Processes	

**Total Credits** **24**

## RESIDENCE AND QUALITY OF WORK

- 2.000 GPA on all MATH courses and courses eligible for the major.<sup>2</sup>
- 2.000 GPA on at least 15 credits of upper level credit in the major.<sup>3</sup>
- 15 credits in MATH in the major taken on the UW-Madison campus.<sup>4</sup>

## FOOTNOTES

<sup>1</sup> Course options below may have prerequisites outside of those listed for this program.

<sup>2</sup> This includes any course with a MATH prefix (including those cross-listed with MATH) regardless of its appearance in the tables above as well as only those specific non-MATH courses listed in the tables above.

<sup>3</sup> This includes all MATH courses (including those crosslisted with MATH) which are numbered 307 and above, regardless of appearing in the course lists above, as well as only those non-MATH courses which appear in the lists above and carry the advanced LAS designation.

<sup>4</sup> This includes only those courses with a MATH prefix (or cross-listed with MATH) numbered 307 and above.