

MATHEMATICS, MINOR

At the core of modern theoretical science, mathematics has historically provided an expressive language as well and theoretical framework for advances in the physical sciences. It has since become central in the life and social sciences and computer science. Mathematics at Penn embraces traditional core areas of mathematics as well as developing areas (Penn is one of the world's leading centers in the application of logic to theoretical computer science). The goals of the major program are to assist students in acquiring both an understanding of mathematics and an ability to use it. The mathematics major provides a solid foundation for graduate study in mathematics as well as background for study in economics, the biological sciences, the physical sciences and engineering, as well as many non-traditional areas..

For more information: <https://www.math.upenn.edu/undergraduate/math-majors-and-minors/mathematics-minor>

Review the math minor first by visiting, <http://www.math.upenn.edu/ugrad/minor.html>. Below is a planning tool that is meant to help you but does not replace the web and adviser visit requirements.

| Code | Title | Course Units |
|--|--|--------------|
| Minor Requirements | | |
| <i>Calculus Requirement</i> | | |
| MATH 104 | Calculus, Part I | 1 |
| MATH 114 | Calculus, Part II | 1 |
| or MATH 115 | Calculus, Part II with Probability and Matrices | |
| MATH 240 | Calculus, Part III | 1 |
| <i>Algebra Requirement</i> | | |
| Select one of the following: | | 1 |
| MATH 312 | Linear Algebra | |
| MATH 313 | Computational Linear Algebra | |
| MATH 350 | Number Theory | |
| MATH 370 | Algebra | |
| MATH 502 | Abstract Algebra | |
| <i>Mathematics Electives or a Cognate</i> | | |
| Select 3 course units of Math Electives or a Cognate ¹ | | 3 |
| The following courses may be eligible for the Minor but carry certain restrictions: ² | | |
| STAT 430 | Probability | |
| STAT 431 | Statistical Inference | |
| STAT 510 | Probability | |
| ECON 103 | Statistics for Economists | |
| ECON 104 | Econometrics | |
| ECON 222 | Advanced Econometric Techniques and Applications | |
| ESE 301 | Engineering Probability | |
| ESE 302 | Engineering Applications of Statistics | |
| ESE 530 | Elements of Probability Theory | |
| ESE 674 | Information Theory | |
| ENM 503 | Introduction to Probability and Statistics | |
| CIS 262 | Automata, Computability, and Complexity | |
| Total Course Units | | 7 |

¹ Mathematics Electives must be math LEVEL 200 or above.

² Please consult with the Math Minor adviser before registering.

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2018 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.