Department of Mathematics and Statistics, Discovery Hall
University of Nebraska at Kearney

Cyber Security Operations Comprehensive, Bachelor of Scienceplus Math Minor*

Adding a math minor to your CS degree is one of the most beneficial degree combinations for a Computer Science major, especially if you are interested in machine learning or research. Your math minor will give you a good foundation set theory, logic, and discrete probability, as well providing you with a high level of mathematical understanding. The curriculum guide for the American Association of Computing Machinery (ACM) deems these topics and skills as essential components for Computer Science education.

This guide shows you how to choose the electives in your program to also earn a math minor, but it does not list the non-math classes that you need to take.

If you would like to discuss the possibility of adding a math minor to your Computer Science Comprehensive degree, please contact Dr. Barton Willis (Department of Mathematics and Statistics, Discovery Hall (DSCH), Room 368, willisb@unk.edu or 308-865-8868).

For your General Studies LOPER 4 requirement take

- **MATH 115** Calculus I with Analytic Geometry (fall and spring) . . . . . 5 credits

To complete the Mathematics Minor take

- **MATH 202** Calculus II with Analytic Geometry (fall and spring, prerequisite: MATH 115) . . . . . 5 credits
- **MATH 250** Foundations of Math (fall and spring, prerequisite: MATH 115) . . . . . 3 credits
- **MATH 260** Calculus III (fall and spring, prerequisite: MATH 202) . . . . . 5 credits
- **MATH 413** Discrete Mathematics (fall only, prerequisite: MATH 250) . . . . . 3 credits
- **MATH 440** Linear Algebra (spring only, prerequisite: MATH 115) . . . . . 3 credits

Instead of taking MATH 413, you make take any *one* of MATH 310 (College Geometry, fall), MATH 350 (Abstract Algebra, spring), MATH 404 (Theory of Numbers, spring), or MATH 460 (Advanced Calculus I, fall), but of these options, MATH 413 is the class that is most relevant to the CS program.

As an alternative to MATH 440, you may take any *one* of MATH 305 (Differential Equations, spring only), MATH 365 (Complex Analysis, spring only), MATH 400 (History of Mathematics, fall only), MATH 420 (Numerical Analysis, spring only), STAT 441 (Probability and Statistics, spring only), but of these options, MATH 440 is the class that is most beneficial to the CS program.

Suggested mathematics course sequence

Freshman year Fall: MATH 115, Spring: MATH 202
Sophomore year Fall: MATH 260, Spring: MATH 250 and MATH 440
Junior year Fall: MATH 413

Once you declare a mathematics minor, your academic advisor will be happy to help you build a four-year plan for earning a minor in mathematics that fits with your other classes. If you start on a path toward earning a math minor, but latter decide to earn a Mathematics Bachelor of Science, all the mathematics and statistics classes listed here will count toward the Bachelor of Science degree.

*This plan is up to date for the 2020-2021 catalog. Also, the designation of a fall or spring class is anticipated, but it is subject to change.

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Physics Comprehensive plus Math Minor*

Physics classes, especially Analytic Mechanics (PHYS 402), Electricity & Magnetism (PHYS 407), and Quantum Mechanics (PHYS 419) are heavy consumers of mathematics. That might help explain why nationwide, about one-third of undergraduate physics majors also earn a degree in mathematics. If you choose to attend a graduate program in physics, earning a math minor will help you be successful with the math intense first year core graduate classes.

Adding Mathematics minor to your program of study requires only taking two additional mathematics classes beyond the math classes that are required for your major.

For your General Studies LOPER 4 requirement take

- **MATH 115** Calculus I with Analytic Geometry (fall and spring) . . . . . 5 credits

Physics Comprehensive Math Requirements take

- **MATH 202** Calculus II with Analytic Geometry (fall and spring, prerequisite: MATH 115) . . . . . 5 credits
- **MATH 260** Calculus III (fall and spring, prerequisite: MATH 202) . . . . . 5 credits
- **MATH 305** Differential Equations (spring only, prerequisite: MATH 260) . . . . . 3 credits

For your Math minor, take

- **MATH 250** Foundations of Math (fall and spring, prerequisite: MATH 115) . . . . . 3 credits

Physics Comprehensive Math, CYBR, or Chemistry Electives, take

- **MATH 350** Abstract Algebra (spring only, prerequisite: MATH 250) . . . . . 3 credits

Alternatively, you may choose from MATH 310 (fall only), MATH 404 (spring only), MATH 413 (fall only), or MATH 460 (fall only).

Suggested mathematics course sequence

Freshman year Fall: MATH 115, Spring: MATH 202
Sophomore year Fall: MATH 260, Spring: MATH 305
Junior year Fall: MATH 250, Spring: MATH 350

Once you declare a mathematics minor, your academic advisor will be happy to help you build a four-year plan for earning a minor in mathematics. If you start on a path toward earning a math minor, but latter decide to earn a Mathematics Bachelor of Science, all the math classes listed here will count toward the Bachelor of Science degree.

If you would like to discuss the possibility of adding a math minor to your Physics Comprehensive degree, please contact Dr. Barton Willis (Department of Mathematics and Statistics, Discovery Hall (DSCH), Room 368, willisb@unk.edu or 308-865-8868).

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Adding a Math Minor to your major*

Aas you may know, every Batchleor of Science program of study requires a second major or minor. So a math minor is not only a great way to build your resumé, but a supplmenting your major with either a minor or a second major is a degree requirement.

One advantage to about pairing your Batchleor of Science degree with a math minor is that Calculus I with Analytic Geometry (five credits) satisfies both your LOPER 4 General Studes reuirement and is a required course for the math minor. So just by satisfying your LOPER 4 requirement, you will gain five credits toward the required twenty-four for a mathematics minor.

For your General Studies LOPER 4 requirement take

- **MATH 115** Calculus I with Analytic Geometry (fall and spring) . . . . . 5 credits

For your Math minor, take

- **MATH 202** Calculus II with Analytic Geometry (fall and spring, prerequisite: MATH 115) . . . . . 5 credits
- **MATH 260** Calculus III (fall and spring, prerequisite: MATH 202) . . . . . 5 credits
- **MATH 250** Foundations of Math (fall and spring, prerequisite: MATH 115) . . . . . 3 credits

For your Math minor electives take

From the following, take *at least three* credits from

- **MATH 310** College Geometry (fall only, prerequisite: MATH 250) . . . . . 3 credits
- **MATH 350** Abstract Algebra (spring only, prerequisite: MATH 250) . . . . . 3 credits
- **MATH 404** Theory of Numbers (spring only, prerequisite: MATH 250) . . . . . 3 credits
- **MATH 413** Discrete Mathematics (fall only, prerequisite: MATH 250) . . . . . 3 credits
- **MATH 460** Advanced Calculus I (fall only, prerequisite: MATH 250) . . . . . 3 credits

And take *at most three* credits from

- **MATH 305** Differential Equations (spring only, prerequisite: MATH 260) . . . . . 3 credits
- **MATH 365** Complex Analysis (spring only, prerequisite: MATH 260) . . . . . 3 credits
- **MATH 400** History of Mathematics (fall only, prerequisite: MATH 115) . . . . . 3 credits
- **MATH 440** Linear Algebra (spring only, prerequisite: MATH 115) . . . . . 3 credits
- **STAT 441** Probability and Statistics (spring only, prerequisite: MATH 260) . . . . . 3 credits

Suggested mathematics course sequence

Freshman year Fall: MATH 115, Spring: MATH 202
Sophomore year Fall: MATH 260, Spring: MATH 250
Junior year Fall: math elective, Spring: math elective

Once you declare a mathematics minor, your academic advisor will be happy to help you build a four-year plan for earning a minor in mathematics. If you start on a path toward earning a math minor, but latter decide to earn a Mathematics Bachelor of Science, all the math classes listed here will count toward the Bachelor of Science degree.

If you would like to discuss the possibility of adding a math minor to your Physics Comprehensive degree, please contact Dr. Barton Willis (Department of Mathematics and Statistics, Discovery Hall (DSCH), Room 368, willisb@unk.edu or 308-865-8868).

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