

# MATHEMATICS, B.S.

Mathematics is an excellent major for the student whose immediate objective is to acquire a strong liberal arts education. Graduates may go on to work as an actuary with insurance companies; as a data analyst with pharmaceutical, biotechnology, or health care companies; as a quality assurance specialist with engineering companies; or in government agencies such as FDA, EPA, NSA, or USDA.

The B.S. program is more technically oriented than the B.A. program. It provides solid preparation for work or study in mathematics or a related field. Students wanting to go to graduate school are encouraged to consider the Accelerated Master's Program (AMP) (p. ) to earn a B.S. and M.A. in 5 years. Strong students can graduate with Disciplinary Honors (p. 2).

An undergraduate degree in mathematics also provides excellent preparation for graduate studies in many areas, including actuarial sciences, computer science, economics, engineering, law, mathematics, operations research, and statistics. The major can be specialized to allow preparation for any of these goals.

## Overall Requirements

- 120 credit hours, to include at least 36 credits at or above the 300 course level.
- Students planning to pursue graduate study should contact their advisor as soon as possible to prepare a plan of study.
- A minimum grade of C (2.0) is required for all CSC, MAT, and STA courses to count towards the major core and the concentration.

## Degree Program Requirements

| Code   | Title | Credit Hours |
|--|-------|--------------|
| University Requirements ( <a href="https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/undergraduate-degrees-and-degree-requirements/">https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/undergraduate-degrees-and-degree-requirements/</a> )  |       |              |
| General Education Requirements (MAC) ( <a href="https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/general-education-program/#generaleducationcorerequirementstext">https://catalog.uncg.edu/academic-regulations-policies/undergraduate-requirements/general-education-program/#generaleducationcorerequirementstext</a> ) |       |              |
| College of Arts and Sciences Additional Requirements (CIC) ( <a href="https://catalog.uncg.edu/arts-sciences/#additionalundergraduaterequirementstext">https://catalog.uncg.edu/arts-sciences/#additionalundergraduaterequirementstext</a> )   |       |              |

## Major Requirements

| Code   | Title   | Credit Hours |
|--|---|--------------|
| <b>Calculus Sequence</b>                                 |   | <b>12</b>    |
| <i>Select one of the following calculus sequences: *</i> |   |              |
| MAT 196 & MAT 296 & MAT 396                              | Calculus A and Calculus B and Calculus C                    |              |
| or MAT 191 & MAT 292 & MAT 293 & MAT 394                 | Calculus I and Calculus II and Calculus III and Calculus IV |              |
| <b>Core Courses</b>                                      |   | <b>21</b>    |
| MAT 253  | Discrete Mathematical Structures                            |              |

|   |   |               |
|---|---|---------------|
| MAT 310   | Elementary Linear Algebra   |               |
| MAT 311   | Introduction to Abstract Algebra  |               |
| MAT 390   | Ordinary Differential Equations   |               |
| MAT 395   | Introduction to Mathematical Analysis                                     |               |
| MAT 490   | Senior Seminar in Mathematics   |               |
| STA 290   | Introduction to Probability and Statistical Inference                     |               |
| <b>Programming Course</b>                           |   | <b>3</b>      |
| CSC 120   | Introduction to Computer Programming for Non-Majors                       |               |
| or CSC 130  | Introduction to Computer Science  |               |
| or CSC 230  | Elementary Data Structures and Algorithms                                 |               |
| <b>Mathematical Sciences Courses</b>                |   | <b>9</b>      |
| <i>Select three of the following:</i>               |   |               |
| MAT or STA courses at the 300 or 400 level          |   |               |
| CSC 427   | Numerical Analysis and Computing  |               |
| CSC 452   | Theory of Computation   |               |
| CSC 454   | Algorithm Analysis / Design   |               |
| <b>Advanced Mathematics Courses</b>                 |   | <b>6</b>      |
| <i>Select two MAT courses at the 400 level</i>      |   |               |
| <b>Interdisciplinary Courses **</b>                 |   | <b>6 or 8</b> |
| <i>Select one of the following fields of study:</i> |   |               |
| <i>Biology</i>                                      |   |               |
| BIO 111 & 111L                                      | Principles of Biology I and Principles of Biology I Laboratory            |               |
| BIO 112 & 112L                                      | Principles of Biology II and Principles of Biology II Laboratory          |               |
| <i>Chemistry</i>                                    |   |               |
| CHE 111 & CHE 112                                   | General Chemistry I and General Chemistry I Laboratory                    |               |
| CHE 114 & CHE 115                                   | General Chemistry II and General Chemistry II Laboratory                  |               |
| <i>Computer Science</i>                             |   |               |
| CSC 220   | Elementary Data Structures-A Transition                                   |               |
| or CSC 230  | Elementary Data Structures and Algorithms                                 |               |
| CSC 330   | Advanced Data Structures  |               |
| <i>Economics</i>                                    |   |               |
| ECO 201   | Principles of Microeconomics  |               |
| ECO 202   | Principles of Macroeconomics  |               |
| <i>Education</i>                                    |   |               |
| <i>Select two of the following:</i>                 |   |               |
| TED 222   | Mathematics for Teaching  |               |
| TED 223   | Mathematics for Teaching Middle Grades                                    |               |
| TED 535   | Literacy in the Content Area  |               |
| TED 545   | Human Diversity, Teaching, and Learning                                   |               |
| <i>Physics</i>                                      |   |               |
| PHY 291 & 291L                                      | General Physics I with Calculus and General Physics I with Calculus Lab   |               |
| PHY 292 & 292L                                      | General Physics II with Calculus and General Physics II with Calculus Lab |               |

\* If you need to take a combination of courses from both sequences contact your advisor.

\*\* Students select a field of study and take 6 or 8 hours of specified coursework.

## Electives

Electives sufficient to complete the 120 credit hours required for degree.

## Disciplinary Honors in Mathematics

### Requirements

- A minimum of 12 credit hours as detailed below.
- UNC Greensboro cumulative GPA of 3.30 or better or, for transfer students, cumulative GPA of 3.30 or better from all prior institutions.
- A grade of B or higher in all course work used to satisfy the Honors requirement in Mathematics

| Code  | Title                                 | Credit Hours |
|---|---------------------------------------|--------------|
| <b>Required</b>                               |                                       | <b>6-9</b>   |
| MAT 493                                       | Honors Work *                         |              |
| HSS 490                                       | Senior Honors Project                 |              |
| <b>Select two courses from the following:</b> |                                       | <b>6</b>     |
| MAT 310                                       | Elementary Linear Algebra             |              |
| MAT 311                                       | Introduction to Abstract Algebra      |              |
| MAT 390                                       | Ordinary Differential Equations       |              |
| MAT 395                                       | Introduction to Mathematical Analysis |              |

\* To be taken before HSS 490

## Recognition

Receive a Certificate of Disciplinary Honors in Mathematics; have that accomplishment, along with the title of the Senior Honors Project, noted on the official transcript; and be recognized at a banquet held at the end of the spring semester.

## Honors Advisor

Contact Richard Fabiano at [fabiano@uncg.edu](mailto:fabiano@uncg.edu) for further information and guidance about Honors in Mathematics.

To apply: <https://honorscollege.uncg.edu/lloyd-international-honors-college/academics/admissions-scholarships/disciplinary-honors-admissions/>.

## Application and Admission

Qualified UNC Greensboro undergraduate students who are pursuing the B.A. in Mathematics, the B.S. in Mathematics, or the B.S. in Statistics may apply for admission to the Accelerated Master's Program (AMP) and the M.S. in Applied Statistics program. A cumulative undergraduate GPA of at least 3.5 based on at least 30 credits earned at UNC Greensboro is required. Applicants must have completed at least 60 credits and may not apply for admission to the AMP before the first semester of the junior year. All applicants must submit the Accelerated Master's Program information when applying for admission to the M.S. in Applied Statistics.

## Courses

Admitted students may apply up to 12 credits of graduate-level course work toward completion of both the undergraduate and graduate degree, provided that they earn a grade of B (3.0) or better in the course and fulfill

graduate-level requirements. The graduate courses the student will take within the Accelerated Master's Program in Applied Statistics must be approved by the Graduate Program Director, must be specified on the Accelerated Master's Program request, and must be selected from the following list.

| Code    | Title                                   | Credit Hours |
|---------|---|--------------|
| STA 602 | Statistical Methods for Data Analytics  | 3            |
| STA 606 | Solving Problems with Data Analytics    | 3            |
| STA 631 | Introduction to Probability             | 3            |
| STA 632 | Introduction to Mathematical Statistics | 3            |
| STA 642 | Statistical Computing                   | 3            |
| STA 670 | Categorical Data Analysis               | 3            |

Please consult with your undergraduate advisor to determine how the courses taken at the graduate level will meet requirements in the bachelor's degree program. All requirements for the M.S. in Applied Statistics remain the same.