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 Degree Program (ADP) (p. 2) to earn a B.S. and M.A. in 5 years. Strong students can graduate with Disciplinary Honors (https://catalog.uncg.edu/arts-sciences/mathematics-statistics/#programstext).

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

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University Requirements (https://catalog.uncg.edu/academic-regulations-policies/undergraduate-policies)

General Education Core Requirements (GEC) (https://catalog.uncg.edu/academic-regulations-policies/undergraduate-policies/general-education-program/#generaleducationcorerequirementstext)

College of Arts and Sciences Additional Requirements (LEC) (https://catalog.uncg.edu/arts-sciences/#additionalundergraduaterequirementstext)

Major Requirements

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Core Courses

MAT 191 Calculus I 1
MAT 292 Calculus II
MAT 293 Calculus III
MAT 310 Elementary Linear Algebra
MAT 394 Calculus IV
MAT 490 Senior Seminar in Mathematics
STA 290 Introduction to Probability and Statistical Inference

1 Counts toward GEC GMT requirement.

Concentrations

Students must select one of the concentrations as detailed following the major requirements.

- Advanced Mathematics
- Statistics

Electives

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

Advanced Mathematics Concentration Requirements

- 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.

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Programming Course

Select one from the following:

CSC 120 Introduction to Computer Programming for Non-Majors
CSC 130 Introduction to Computer Science
CSC 230 Elementary Data Structures and Algorithms

Additional Mathematics Courses 12

MAT 253 Discrete Mathematical Structures
MAT 311 Introduction to Abstract Algebra
MAT 390 Ordinary Differential Equations
MAT 395 Introduction to Mathematical Analysis

Advanced Mathematics Courses* 6

Two MAT courses at the 400-level. At least one of which must be chosen from the following: *

MAT 422 Intro Functional Analysis
MAT 425 Intermediate Math Analysis
MAT 440 Introductory Complex Analysis

Mathematical Sciences Courses 9

Select three from the following:

MAT or STA courses 300 level or above *
CSC 427 Numerical Analysis and Computing
CSC 452 Theory of Computation
CSC 454 Algorithm Analysis / Design

Interdisciplinary Courses 8

Choose one of the subject options below

Physics

PHY 291 General Physics I with Calculus
PHY 292 General Physics II with Calculus

Chemistry

CHE 111 General Chemistry I
CHE 112 General Chemistry I Laboratory
CHE 114 General Chemistry II
CHE 115 General Chemistry II Laboratory

Biology

BIO 111 Principles of Biology I
BIO 111L Principles of Biology I Laboratory
**Statistics Concentration Requirements**

**Programmed Course**
Select one of the following:

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CSC 120</td>
<td>Introduction to Computer Programming for Non-Majors</td>
<td>3</td>
</tr>
<tr>
<td>CSC 130</td>
<td>Introduction to Computer Science</td>
<td></td>
</tr>
<tr>
<td>CSC 230</td>
<td>Elementary Data Structures and Algorithms</td>
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</tbody>
</table>

**Additional Statistics Courses**
- STA 301 Statistical Methods
- STA 352 Statistical Inference

Select two additional STA courses at the 300 level or above.

**Advanced Statistics Courses**
Select two STA courses at the 400 level.

**Mathematical Sciences Courses**
Two additional courses chosen from the following:
- MAT or STA courses 300 level or above.
- MAT 253 Discrete Mathematical Structures
- CSC 425 Bioinformatics
- CSC 427 Numerical Analysis and Computing

* The following courses are not eligible to count towards the Mathematical Sciences Courses requirement:
  - MAT 405 Foundations of Mathematics for Teaching I
  - MAT 406 Foundations of Mathematics for Teaching II
  - MAT 413 Historical Development of Mathematics
  - MAT 465 Student Teaching and Seminar-Secondary Mathematics

**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**

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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MAT 493</td>
<td>Honors Work</td>
<td>6-9</td>
</tr>
<tr>
<td>HSS 490</td>
<td>Senior Honors Project</td>
<td></td>
</tr>
</tbody>
</table>

Select two courses from the following:
- 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 for further information and guidance about Honors in Mathematics. To apply: [http://honorscollege.uncg.edu/forms/disc-application.pdf](http://honorscollege.uncg.edu/forms/disc-application.pdf)

**Accelerated B.A. or B.S. to M.A. in Mathematics**

**Application and Admission**
Qualified UNC Greensboro undergraduate students who are pursuing the B.A. or B.S. in Mathematics may apply for admission to the Accelerated Master’s Program (AMP) and the M.A. in Mathematics 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 Request for Accelerated Master’s Program to the Graduate School. Applicants must simultaneously apply for admission to the M.A. in Mathematics, submitting all application materials excluding GRE scores.

**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 Mathematics must be approved by the Director of Graduate Study, must be specified on the Request for Accelerated Master’s Program, and must be chosen from among the following courses:

**Code**

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<tbody>
<tr>
<td>MAT 695</td>
<td>Mathematical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MAT 696</td>
<td>Mathematical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>STA 631</td>
<td>Introduction to Probability</td>
<td>3</td>
</tr>
<tr>
<td>STA 632</td>
<td>Introduction to Mathematical Statistics</td>
<td>3</td>
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<tr>
<td>STA 661</td>
<td>Advanced Statistics in the Behavioral and Biological Sciences I</td>
<td>3</td>
</tr>
<tr>
<td>STA 662</td>
<td>Advanced Statistics in the Behavioral and Biological Sciences II</td>
<td>3</td>
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Please consult with an advisor to determine how the courses taken at the graduate level will meet requirements in the bachelor's degree program. All degree requirements for the M.A. in Mathematics remain the same.