

# COMPUTER SCIENCE, M.S.

The M.S. in Computer Science requires 30 credit hours with at least 24 credits in computer science (CSC) courses. Three options for the capstone experience are offered: comprehensive examination, project, or thesis. A concentration in Data Science and Big Data is available for Computer Science M.S. students.

For information regarding deadlines and requirements for admission, please see <https://grs.uncg.edu/programs/>.

## Degree Program Requirements

**Required:** 30 credit hours

Code	Title	Credit Hours
<b>Core Courses (9 credits)</b>		
CSC 654	Algorithm Analysis and Design	3
Select one course (3 credits) from the following:		3
CSC 652	Theory of Computation	
CSC 656	Foundations of Computer Science	
Select one course (3 credits) from the following:		3
CSC 640	Software Engineering	
CSC 662	Principles of Operating Systems	
CSC 671	Advanced Database Systems	
CSC 677	Principles of Computer Networks	
<b>Track Courses (12 credits)</b>		
Select four courses (12 credits) from one of the following tracks:		12
<i>Foundation and Algorithms Track</i>		
CSC 639	Introduction to Compiler Design	
CSC 652	Theory of Computation	
CSC 656	Foundations of Computer Science	
CSC 685	Modern Cryptography	
STA 631	Introduction to Probability	
STA 651	Mathematical Statistics	
<i>Data Science and Big Data Track</i>		
CSC 605	Data Science *	
CSC 607	Network Analysis	
CSC 610	Big Data and Machine Learning *	
CSC 616	Digital Image Processing	
CSC 617	Deep Learning in Computer Vision	
CSC 625	Bioinformatics	
CSC 629	Artificial Intelligence	
CSC 646	Natural Language Processing	
CSC 674	Principles of Data Mining	
CSC 671	Advanced Database Systems *	
CSC 672	Database System Architecture	
CSC 677	Principles of Computer Networks	
STA 631	Introduction to Probability	
STA 651	Mathematical Statistics	
<i>Systems and Networks Track</i>		
CSC 607	Network Analysis	
CSC 629	Artificial Intelligence	
CSC 640	Software Engineering	

CSC 642	Human-Computer Interface Development
CSC 661	Principles of Computer Architecture
CSC 662	Principles of Operating Systems
CSC 671	Advanced Database Systems
CSC 677	Principles of Computer Networks
CSC 678	Principles of Wireless Networks
CSC 681	Principles of Computer Security

### Electives (3-6 credits)

Select 3-6 credits of electives from other 600- or 700-level CSC courses \*\*

### Capstone Experience (6 or 3 credits)

Select one of the following options: 6 or 3

#### Thesis (6 credits)

CSC 699 Thesis

#### Project (3 credits)

CSC 698 Project in Computer Science

#### Capstone Course (3 credits)

CSC 696 Master's Capstone

**Total Credit Hours** 30

\* *Students in the Data Science and Big Data Concentration must take CSC 605, CSC 610, and CSC 671 as part of their concentration requirements.*

\*\* *Depending on capstone option selected and with the prior approval of the Graduate Program Director. A number of selected courses from other departments are also available; interested students should contact the Graduate Program Director.*

## Thesis, Project, or Capstone Course Option (Capstone Experience)

All students will complete 30 credit hours of graduate-level work, as described above, where students may elect to use 6 credits for a thesis or 3 credits for a project or capstone course.

### Thesis

The candidate may prepare a thesis based on the investigation of a topic in computer science. A thesis director will be appointed by the Department Head after consultation with the student and the Graduate Program Director. The writing of a thesis requires the scholarly exposition and documentation of a substantial problem. In some cases, this may lead to a new solution to the problem and to original results. While writing the thesis, candidates may include 6 credits of CSC 699 Thesis in the required 30 credits for the program. An oral examination on the thesis is required.

### Project

The candidate may prepare a project (theoretical or programmed) based on a topic in computer science. The project may be work-related. A project director will be appointed by the Department Head after consultation with the student and the Graduate Program Director. The preparation of a project requires a description of the problem and documentation of any software products or description of theoretical solutions. While preparing the project, candidates may include 3 credits of CSC 698 Project in Computer Science in the required 30 credits for the program. An oral examination on the project is required.

### Capstone Course

The candidate may take a seminar course, CSC 696 Master's Capstone, that focuses on professional technical communication, both written and oral. Students will synthesize work they have accomplished in the master's studies into a coherent portfolio with technical extensions as determined in the class. Students will also make oral presentations of their work in class. The design of this course makes it particularly suitable for students developing a technical portfolio for future work in industry.

Please consult with an advisor to determine how the course taken at the graduate level will meet requirements in the bachelor's degree program. All degree requirements for the M.S. in Computer Science remain the same.

### Data Science and Big Data Concentration

Code	Title	Credit Hours
<b>Core Courses (12 credits)</b>		
CSC 605	Data Science	3
CSC 610	Big Data and Machine Learning	3
CSC 654	Algorithm Analysis and Design	3
CSC 671	Advanced Database Systems	3
<b>Elective Courses (3 credits)</b>		
Select one course (3 credits) from the following:		3
CSC 607	Network Analysis	
CSC 616	Digital Image Processing	
CSC 617	Deep Learning in Computer Vision	
CSC 625	Bioinformatics	
CSC 629	Artificial Intelligence	
CSC 674	Principles of Data Mining	
STA 635	Theory of Linear Regression	
STA 661	Advanced Statistics in the Behavioral and Biological Sciences I	
STA 682	Theory of Time Series	
<b>Total Credit Hours</b>		<b>15</b>

## Accelerated B.S. to M.S. in Computer Science

### Application and Admission

Qualified UNC Greensboro undergraduate students who are pursuing the Bachelor of Science (B.S.) in Computer Science may be nominated to participate in the Accelerated Master's Program (AMP) by the Graduate Program Director. Students must have completed a minimum of 60 credit hours with at least 30 credits and a cumulative undergraduate GPA of at least 3.5 at UNC Greensboro.

### Courses

Admitted students may apply the following 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:

Code	Title	Credit Hours
CSC 652	Theory of Computation	3
CSC 654	Algorithm Analysis and Design	3
CSC 662	Principles of Operating Systems	3
CSC 677	Principles of Computer Networks	3