NANOSCIENCE, M.S.

The 31 credit hour, non-thesis, online M.S. in Nanoscience follows the Professional Science Master’s degree model, featuring course work in nanosciences and business and an internship to provide practical experience. It is designed for students with strong backgrounds in technical fields who seek additional specialized training to qualify them for positions in companies that work in the field of nanotechnology.

The on-campus M.S. in Nanoscience Thesis Option is a 31 credit hour program that includes the completion of a 6 credit thesis. Students are expected to start their research project during their first year in the program.

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

In addition to the application materials required by the Graduate School, applicants must submit a personal statement indicating their interest in the program and a current curriculum vitae.

Qualified applicants will have a B.S. degree in an area related to Nanoscience (physics, chemistry, biology, mathematics, computer science, or engineering).

Degree Program Requirements

Required: 31 credit hours

Non-Thesis Option

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>NAN 700</td>
<td>Principles of Nanoscience I: Physical, Chemical, and Biological Foundations</td>
<td>3</td>
</tr>
<tr>
<td>NAN 706</td>
<td>Principles of Nanoscience II: Analytical, Statistical, and Computational Foundations</td>
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Nanoscience Elective Courses (15 credits)

Select 15 credits of electives from NAN graduate courses * 15

Nanoscience Scientific Ethics (1 credit)

NAN 710  Scientific Integrity  1

Nanoscience Practicum (3 credits)

NAN 707  Lab Protocols and Practice  3

Science Communications (3 credits)

NAN 708  Science Communications  3

Internship/Practicum (Capstone Experience) (3 credits)

NAN 698  Capstone Experience  3

Total Credit Hours 31

* Students may select relevant courses from outside NAN in consultation with their committee/advisor.

Thesis Option

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Nanoscience Elective Courses (12 credits)

Select 12 credits of electives from NAN graduate courses * 12

Nanoscience Scientific Ethics (1 credit)

NAN 710  Scientific Integrity  1

Nanoscience Practicum (3 credits)

NAN 707  Lab Protocols and Practice  3

Science Communications (3 credits)

NAN 708  Science Communications  3

Thesis Research (6 credits)

NAN 699  Thesis  6

Total Credit Hours 31

* Students may select relevant courses from outside NAN in consultation with their committee/advisor.

Instrumentation Concentration

Required: 31-33 credit hours

The Master of Science in Nanoscience Instrumentation Concentration involves course work on the theory and application of nanoscale characterization and analytical instruments including scanning electron microscopy, optical microscopy techniques, atomic force microscopy, Energy-dispersive X-ray spectroscopy (EDX), and surface analysis tools like the Raman spectroscopy and X-ray photoelectron spectroscopy (XPS). This concentration will train individuals in the theory, operation, and implementation of these instruments in the context of material characterization.

Non-Thesis Option

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Nanoscience Elective Courses (6 credits)

Select 6 credits of electives from NAN graduate courses * 6

Nanoscience Instrumentation Elective Courses (9-11 credits)

Select three courses (9-11 credits) from the following: ** 9-11

NAN 604  Nanotechniques

NAN 615  Spectroscopy Methods in Nanoscience

NAN 623  Optical Microscopy for Nanoscience

NAN 624  Particle Beam Microscopy for Nanoscience

NAN 625  Molecular Biology in Nanosciences

NAN 630  Advances in Nano-Biosensors

Nanoscience Scientific Ethics (1 credit)

NAN 710  Scientific Integrity  1

Nanoscience Practicum (3 credits)

NAN 618  Lab Protocols and Practice  3

Science Communications (3 credits)

NAN 619  Science Communications  3

Internship/Practicum (Capstone Experience) (3 credits)
NAN 698  Capstone Experience 3

Total Credit Hours 31-33

* Students may select relevant courses from outside NAN in consultation with their committee/advisor.

** Or other courses approved by the student's committee/advisor.

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Nanoscience Elective Courses (3 credits)
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Nanoscience Instrumentation Elective Courses (9-11 credits)
Select three courses (9-11 credits) from the following: ** 9-11

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Nanoscience Scientific Ethics (1 credit)
NAN 710  Scientific Integrity 1

Nanoscience Practicum (3 credits)
NAN 618  Lab Protocols and Practice 3

Science Communications (3 credits)
NAN 619  Science Communications 3

Thesis Research (6 credits)
NAN 699  Thesis 6

Total Credit Hours 31-33

* Students may select relevant courses from outside NAN in consultation with their committee/advisor.

** Or other courses approved by the student's committee/advisor.

Professional Master's in Business Concentration

Required: 31 credit hours

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Nanoscience Elective Courses (6 credits)
Select 6 credits of electives from NAN graduate courses * 6

Professional Master’s in Business Concentration Courses (9 credits)
Select three courses (9 credits) from the following: 9

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<td>MBA 701</td>
<td>Quantitative Analysis</td>
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<td>MBA 702</td>
<td>Financial and Managerial Accounting</td>
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<td>MBA 703</td>
<td>Managerial Economics</td>
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<tr>
<td>MBA 706</td>
<td>Marketing Management</td>
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<tr>
<td>MBA 716</td>
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Nanoscience Scientific Ethics (1 credit)
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Nanoscience Practicum (3 credits)
NAN 618  Lab Protocols and Practice 3

Science Communications (3 credits)
NAN 619  Science Communications 3

Internship/Practicum (Capstone Experience) (3 credits)
NAN 698  Capstone Experience 3

Total Credit Hours 31

* Students may select relevant courses from outside NAN in consultation with their committee/advisor.

Accelerated B.A. or B.S. to M.S. in Nanoscience

Application and Admission

Qualified undergraduate students at UNC Greensboro may apply for admission to the Accelerated Master’s Program (AMP) and the M.S. in Nanoscience if they have a cumulative undergraduate GPA of at least 3.5 in a STEM major (e.g. Biology, Chemistry, Physics, Mathematics, Computer Science, or other STEM disciplines) and are in their junior year. Transfer students may apply if their cumulative GPA from their previous institution was at least a 3.0, or if they have earned a 3.0 (with a 3.5 in courses related to the major) at UNCG during their first semester. All applicants must complete the Accelerated Master’s Program information when applying for the M.S. in Nanoscience. Applicants must provide three letters of recommendation, a resume, and a statement of purpose. Those wishing to enter the AMP must have taken Calculus I and II (MAT 183 Mathematics for the Life Sciences/MAT 184 Calculus for the Life Sciences, MAT 191 Calculus I/MAT 292 Calculus II, or MAT 196 Calculus A/MAT 296 Calculus B).

Courses

Admitted students will complete the following 12 credits of foundational graduate-level courses in Nanoscience (below) that will be applied towards completion of their undergraduate degree and the M.S. degree, provided they earn a grade of B (3.0) or better in these courses and fulfill graduate-level requirements.

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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 Informatics and Analytics remain
the same. Students will complete the remaining 19-23 credits required for the M.S. in Nanoscience program in their fifth year.