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 the Guide to Graduate Admissions (https://grs.uncg.edu/prospective/guide/).

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>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>NAN 616</td>
<td>Principles of Nanoscience I: Physical, Chemical, and Biological Foundations</td>
<td>3</td>
</tr>
<tr>
<td>NAN 617</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 618 Lab Protocols and Practice 3

Science Communications (3 credits)
NAN 619 Science Communications 3

Internship/Practicum (Capstone Experience) (3 credits)
NAN 698 Professional MS in Nanoscience Internship 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 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

* 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 Introduction to 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)
Professional MS in Nanoscience Internship (3 credits)
NAN 698, Professional MS in Nanoscience Internship  
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.

Thesis Option

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

- NAN 604, Nanotechniques
- NAN 615, Introduction to 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

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

- MBA 701, Quantitative Analysis for Decision Making
- MBA 702, Financial and Managerial Accounting
- MBA 703, Economic Policies and Impact on Global Outcomes
- MBA 706, Marketing Management
- MBA 716, Leadership and Sustainable Business

**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, Professional MS in Nanoscience Internship 3

Total Credit Hours 31

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