

Nanoengineering, PhD

Joint School of Nanoscience and Nanoengineering

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The Ph.D. program in Nanoengineering features coursework, laboratory rotations and extensive dissertation research involving engineering at the nanoscale. It is designed for students with a strong academic track record who seek advanced-level education and training to pursue careers in academia, industrial or government organization that utilize nanotechnology. Students will have the opportunity to work in one or more of the following research areas: synthetic biology, nanomaterials & nanomanufacturing, nanobioelectronics & nanomaterials-based devices, environmental nanotechnology, and computational nanotechnology.

Additional Admission Requirements

- Bachelor's degree in engineering or a closely related field with minimum 3.5 GPA or master's degree in engineering or a closely related field
- GRE scores and for international applicant TOEFL/IELTS scores
- Three professional recommendation letters with two of them from University faculty members
- Current curriculum vitae & personal statement

Degree Requirements

Total credit hours: 60 (post baccalaureate)

- Core courses (Select 15 credit hours): NANO 701 and NANO 705 are mandatory and select other 3 core courses from NANO 702, 703, 704, 781, 782.
- Lab Rotations: Select 3 credit hours from: NANO 851-859 or consortium course NAN 611 (UNCG)
- Select 9 credit hours from: NANO 800-899 excluding 851-859 or consortium courses NAN 700-798 (UNCG) or other 800 level courses with approval of the advisor and graduate coordinator/department chair
- Select 9 credit hours from: NANO 700-899 excluding 790-799 and 851-859, or consortium courses NAN 600-798 (UNCG) excluding NAN 621, 622, 628 or other courses with approval of the advisor and graduate coordinator/department chair
- Supervised Research (6 credits): NANO 994
- Teach at least one semester
- Dissertation (18 credits): NANO 997
- Average "B" grade for core courses
- Pass preliminary exam, candidacy exam, dissertation defense
- Attend all JSNN seminars

Preliminary Exam (Literature Review Exam):

The Preliminary Exam tests a Ph.D. student's ability to prepare and present a comprehensive overview of a topic based on existing journal literature. The Preliminary Exam is based on a written review paper appropriate to the student's field of study in the style of a peer-reviewed journal article. It should be a comprehensive discussion of the literature, scientific theory, problems or theoretical deficiencies, and possible areas of research related to nanotechnology. The topic and format of the review paper should be decided by the student in collaboration with the student's academic advisor. The Preliminary Exam will conclude with the delivery of a publication-worthy review paper and a short seminar on the topic, which will culminate with a closed review with the Review Committee and a preliminary overview of the student's

research project. This exam should occur by the end of the first year and **MUST** occur by the end of the Ph.D. student's third semester.

Candidacy Exam (Dissertation Research Proposal):

The Ph.D. Research Proposal is a written and oral exam that will advance the student to candidacy in the Nanoengineering Ph.D. Program. The format for this examination is consistent with the highest standards and in accordance with the University Graduate Catalog. The proposal must be defended no later than the end of the student's fourth semester. Evaluation of the student's proposal occurs in a closed-door defense of the proposal in front of the Dissertation Committee. Students will receive either, (1) a "Full Pass" (no other action is required on the part of the student) or (2) a "Conditional Pass" (additional action is required on the part of the student), or (3) a "Fail". In the case of a fail, the committee has the option of allowing a re-examination. If this course of action is taken, the student must be re-examined within four months on those aspects of the defense indicated by the committee as not satisfactory. Re-examination can only occur once. In the case of a fail and re-examination does not occur, the student **DOES NOT** qualify for candidacy and will exit the Ph.D. program. The committee may recommend that the student be given the option to enroll in the Nanoengineering Master program.

Dissertation Research:

The student may not register for doctoral dissertation credits (NANO 997) before finishing all other course requirements or passing Preliminary Examination. No more than 18 dissertation credit hours will be counted toward the total credit hours requirement for the Ph.D. degree.

Final Oral Dissertation Defense:

The Oral Dissertation Defense will be conducted by the student's dissertation committee and scheduled after a complete dissertation is reviewed and approved by each member of the dissertation committee. The examination may not be held earlier than six months after proposal defense. The student's academic/dissertation advisor schedules the oral dissertation defense and informs the Graduate College before the examination to request a graduate faculty representative from the Graduate College. The oral defense is generally open to the public unless there is confidential information. The committee deliberation is open only to the dissertation committee members. Upon deliberation, the dissertation committee will determine if the student pass the oral defense. If the student fails, with sufficient consideration, the student's dissertation committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismiss from the Nanoengineering Ph.D. program.

Submission of Dissertation:

The dissertation submission must follow the guidelines set by Graduate College of the University. It is the responsibility of the student to check with the Graduate College for the current dissertation format and submission guidelines. Upon passing the Oral Dissertation Defense, the Ph.D. student must have the final dissertation approved by each member of the dissertation committee. The approved dissertation must be submitted to the Graduate College by the deadline given in the academic calendar of the University.

Program Specific Academic Policies:

Students must be in good academic standing and meet all requirements as specified on the Plan of Graduate Study with an overall Grade Point Average of 3.00 or higher. Students must be enrolled in the semester in which they apply for graduation. Students intending to graduate must apply for graduation by the posted deadline and comply with all the requirements for the Ph.D. degree.