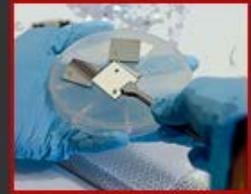


Master of Nanoengineering



Master of Nanoengineering

Program Overview

The Master of Nanoengineering (MNAE) is an on campus and distance education program and is designed for students with an undergraduate degree in a science or engineering discipline who wish to pursue a graduate degree in nanoengineering. The field of nanoengineering is expected to revolutionize technology and improve quality of life, particularly as related to energy, environment, and health. Students will achieve an understanding of the fundamental advantages in nanoscale materials, devices and systems. It is a 30 credit hour degree program that does not require a thesis, final oral exam or on-campus residency. GRE scores are recommended but not required. NC State has an existing strength in nanostructured materials and devices.

Admission Requirements

The minimum requirements for admission to the online Master of Nanoengineering graduate degree program are as follows:

- BS degree in science (i.e., chemistry or physics) or engineering from an accredited university with a minimum 3.0 GPA in their major.
- GRE scores should be submitted if available and should not be more than two years old.
- Three letters of recommendation from persons able to comment on the applicant's qualifications for graduate study.
- Official transcript.
- Completion of a written statement outlining student's background, work experience and particular interest in nanoengineering.
- The Graduate School requires that all international applicants take the TOEFL or IELTS examinations unless they have completed one year of study at a university in the United States. The exam must have been taken within two years of receipt of application. Standard practices for admission of international students by the NCSU graduate school will be followed.
- Complete the online graduate application at <http://www.ncsu.edu/grad/applygrad.htm>

Degree Requirements

- Completion of 30 graduate credit hours with an overall GPA of 3.0.
- Coursework must include 12 credit hours in core courses, a minimum of 12 credit hours from the areas of concentration and 6 technical elective credit hours (e.g., in another area of specialization or in math).
- A minimum of three courses are required to qualify for a concentration in one of three areas: materials science in nanoengineering, nanoelectronics and nanophotonics, and biomedical sciences in nanoengineering.

- If the student is admitted to the nanoengineering program, a maximum of twelve hours taken as an NDS student from NC State or from another institution may apply toward the 30 credit hour requirement. However, courses taken from other universities must be approved.
- No thesis or on-campus residency required.
- After a student has been admitted and enrolls for the first time, he/she is required to maintain continuous enrollment in each fall and spring semester until completion of the degree program. A student in good academic standing may request a leave of absence for good reasons from the Director of Graduate Programs in Nanoengineering. The leave may not exceed two semesters.
- A six year time limit for completion is required.

Program Logistics

It is preferable to seek admission to the degree program as soon as possible to assure integration into the advising process. However, a person does not have to be admitted to the MNAE program to enroll in an on campus or online credit course. Prior to applying to Graduate School, a qualified individual may enroll in graduate courses as a Non-Degree Studies (NDS) student. The NDS classification is designed for individuals who wish to undertake academic work but who are not currently admitted to a degree program. Those who wish to take only a few graduate courses and not pursue a degree do not need to apply for formal program admission to NC State University. However, students who wish to earn the degree must formally apply for admission to the Graduate School at <http://www.ncsu.edu/grad>. When completing the online application, please be sure to select the "Distance Track" version of the degree if you intend to pursue the degree via the Engineering Online network.

Course Registration

On campus students register for courses in the normal manner through the University MyPack Portal system whereas distance education students register for online courses through Engineering Online. To register for an Engineering Online course, complete the registration form on the Engineering Online website at <http://EngineeringOnline.ncsu.edu> by clicking on "Course Registration" at the top of the main page. Distance students cannot register through the University MyPack Portal system for Engineering Online courses.

Course Offerings

A list of courses available for each semester is available in the Graduate School Course Catalog while available distance education courses can be found on the Engineering Online website. Full-time employed individuals may only enroll in two online courses per semester. It is highly recommended that new online students enroll in only one course during their first semester.

The following courses will be available through the Engineering Online program in various semesters.

Part I. Basic Core Courses

- MSE 565 -- Introduction to Nanomaterials
- MSE 500 -- Modern Concepts in Materials Science
- ECE/CHE 568 -- Conventional and Emerging Nanomanufacturing Techniques
- ISE 718 -- Micro/Nanoscale Fabrication and Manufacturing
- MAE 536 -- Micro and Nano Electromechanical Systems

Part IIA. Materials Science in Nanoengineering

- MSE 566 -- Mechanical Properties of Nanostructured Materials
- MSE 721 -- Nanoscale Simulations and Modeling
- MSE 702 -- Defects in Solids
- MSE 706 -- Phase Transformations and Kinetics
- MSE 791 -- Nanoscale Characterization (under development)
- MSE 708 -- Thermodynamics of Materials

Part IIB. Nanoelectronics and Nanophotonics

- ECE 530 -- Physical Electronics
- ECE 592 -- Wearable Biosensors
- ECE 723 -- Optical Properties of Semiconductors
- CHE 560 -- Chemical Processing of Electronic Materials
- MSE 760 -- Materials Science in Processing of Semiconductor Devices
- MSE 771 -- Materials Science of Nanoelectronics

Part IIC. Biomedical Sciences in Nanoengineering

- a. CHE 596 -- Colloid Science and Nanoscale Engineering
- b. BME 590 -- Introduction to Nano-Biomaterials
- c. BME 540 -- Nanobiotechnology: Processing, Characterization, and Applications
- d. BME 566 -- Polymeric Biomaterials Engineering
- e. ECE 542 -- Neural Networks
- f. ECE 592 -- Wearable Biosensors
- g. BME 590 -- Advanced Drug Delivery Systems

Part III. Research Project in Nanoengineering

- a. MSE 795, Master of Nanoengineering Project

For a list of distance education courses approved for the fall, spring or summer semesters, visit the Engineering Online website at <http://EngineeringOnline.ncsu.edu>

Course Logistics

Online courses are the same as on campus courses in terms of content, requirements and academic rigor. On campus class lectures are captured, digitized and placed on the Internet for distance students to access at any time and from any location. Students must, however, follow the on-campus class schedule in terms of submitting homework and taking exams. Course assignments, lecture notes, and handouts are made available to distance students on the course website. All in-class exams must be proctored.

Contact Information

- For more information about the Master of Nanoengineering (MNAE) program, contact:

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Telephone: 919.515.7622
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Department website: <http://www.mse.ncsu.edu>

- For more information about the online registration process, course offerings and course logistics, contact:

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Telephone: 919.515.3815
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Engineering Online website: <http://EngineeringOnline.ncsu.edu>