

# Nano-Science and Technology (Minor)

To see more about what you will learn in this program, visit the Learning Outcomes website (<https://apps.oirp.ncsu.edu/pgas/>)!

The Center for Advanced Self-Powered Systems of Integrated Sensors and Technologies (ASSIST) is offering a minor in Nano-Science and Technology for any student enrolled in an engineering curriculum. Students will be trained in the fundamentals of nano-scale materials, devices, and systems for a broad variety of applications. This is a multidisciplinary program consisting of courses from a variety of engineering disciplines. Completion of this minor will prepare undergraduate students for the global workforce by combining technical training in nano-science and technology with diversity awareness, engineering ethics, and an understanding of global issues in science and technology.

## Admissions and Certification of Minor

To be admitted to the program, a student must have a GPA of at least 2.0. Application for admission to any University minor program is now available via MyPack Portal. Admission will be based upon the student's academic record, and in most cases no longer requires departmental review. To apply to Add a Minor, go to: [https://go.ncsu.edu/minor\\_coda](https://go.ncsu.edu/minor_coda) ([https://go.ncsu.edu/minor\\_coda/](https://go.ncsu.edu/minor_coda/)).

The program administrator will oversee admission to, and certify completion of the minor program. Prior to admission, qualified students will meet with the program administrator. During this meeting a plan of work for the minor detailing which courses will be taken each semester will be designed and signed by the student. Students will then be required to consult with the program administrator during each registration period to ensure satisfactory progress. All courses counted for the minor must be completed with a grade of "C-" or better. Students may not take minor coursework on a credit only (pass/fail) or S/U basis. The program administrator will verify that all requirements have been met, and certify the minor prior to graduation. The minor must be completed no later than the semester in which the student expects to graduate from his or her degree program. Paperwork for certification should be completed no later than during the registration period for the student's final semester at N.C. State.

## Contact Person

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**Effective date: 1/2013**  
**SIS Code: 14NSTM**

## Plan Requirements

- Completion of the minor requires a minimum of 18 credit hours. This includes one required introductory course, three technical elective courses, and two general education elective courses.

- All courses counted for the minor must be completed with a grade of "C-" or better. Students may not take minor coursework on a credit-only (S/U) basis.

Code	Title	Hours	Counts towards
<b>Required Course</b>			
E 304	Introduction to Nano Science and Technology	3	
<b>Technical Electives</b>			
Select three of the following: <sup>1,2</sup>		9	
CHE 465	Colloidal and Nanoscale Engineering		
CHE 460	Chemical Processing of Electronic Materials		
BEC/CHE 462	Fundamentals of Bio-Nanotechnology		
BME 385	Bioinstrumentation		
BME 425	Bioelectricity		
BME 412	Biomedical Signal Processing		
TE/BME 466	Polymeric Biomaterials Engineering		
MAE 495	Special Topics in Mechanical and Aerospace Engineering		
MSE 460	Microelectronic Materials		
MSE 465	Introduction to Nanomaterials		
ECE 404	Introduction to Solid-State Devices		
ECE 442	Introduction to Integrated Circuit Technology and Fabrication		
ECE/CHE 468	Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems		
<b>General Education Electives</b>			
General Education Electives (see below)		6	
<b>Total Hours</b>		<b>18</b>	

<sup>1</sup> Students are required to complete three courses from the technical electives, which cover specific topics related to nano-science and technology. These courses are offered by a variety of engineering departments. To underscore the multidisciplinary nature of the minor, it is required that at least one of the technical electives comes from outside the student's home department.

<sup>2</sup> This list can be supplemented by special topics classes when available. See coordinator for applicable options.

## General Education Electives

The general education requirement will equip students with the professional skills necessary for success in a global engineering environment. These courses come from the NCSU General Education Program (GEP) lists, and may count towards a student's GEP requirements as well as the minor.

One course is required from each of the two categories below:

Code	Title	Hours	Counts towards
<b>Engineering Ethics</b>		<b>3</b>	
STS 302	Contemporary Science, Technology and Human Values		
STS 304	Ethical Dimensions of Progress		
PHI/STS 325	Bio-Medical Ethics		
PHI 375	Ethics		
<b>Diversity and Global Issues in Science and Technology</b>		<b>3</b>	
STS/WGS 210	Women and Gender in Science and Technology		
STS 214	Introduction to Science, Technology, and Society		
PS 314	Science, Technology and Public Policy		