

New Requirements for the Interdisciplinary Minor in Nanotechnology

	Course Number	s.h.	Date Completed	Grade
1. Required Core Nanotechnology Courses (6 sh)				
Introduction to Nanoscale Science	NANO105	3		
Tools and Techniques in Nanotechnology	NANO210	3		
2. Advanced Elective Courses (12 sh)				
NOTE: Choose courses from those listed below. A minimum of 2 courses must have a NANO prefix. The selection of elective courses is frequently guided by the general areas of NANO research conducted at LHU (Materials Science/Engineering or Nanotoxicology).				
*Generation & Modification of Nanostructures	NANO 304	3		
*Characterization of Nanostructures	NANO 306	3		
Advanced Applied Nanotechnology Laboratory	NANO458	3		
Independent Study in Nanotechnology	NANO 499	1-3		
Cellular and Molecular Biology	BIOL 330	4		
Microbiology	BIOL 340	4		
Environmental Toxicology	BIOL425	3		
Inorganic Chemistry	CHEM301	3		
Environmental Geology	GEOS215	3		
Mineralogy and Petrology	GEOS305	3		
Heat	PHYS 250	3		
Electronics	PHYS 290	4		
Optics	PHYS 325	4		
	TOTAL	18		

* NANO 105, NANO 210, PHYS 170 and PHYS 171 are prerequisites for 300-level NANO courses. Students may also take 300-level NANO courses if they have successfully completed PHYS 130, PHYS 131, and MATH 141.

Reasons for the revision:

- The PSU summer NMT program is no longer financially feasible for LHU students
- We have created 4 new courses to replace the vast majority of the content and skills developed during the summer NMT program
- We have revised both the BS in Physics - Applied Physics/Nanotechnology and BS in Chemistry – Nanoscience 4-year degree tracks
- The revision of the minor is a natural consequence of offering the Nanotechnology program completely at LHU during the regular Fall/Spring semesters and within Physics faculty members' regular teaching loads
- Natural science faculty members have already mentored some successful research projects in the subfield of Nanotoxicology and we would like to support the advancement of that line of research as well as continuing to support research in Materials Science & Engineering.
- The revised minor will serve as a marketable credential/opportunity that can be used to attract students to LHU.

Previous requirements (Last Revised on 22nd, February 2007):

The Nanotechnology Minor is open to students who have met the following prerequisites.

1. (PHYS130 and PHYS131) or (PHYS170 and PHYS171)
2. CHEM120 and CHEM121
3. NANO100 (formerly PHAP 100)

Most students currently majoring in Biology, Biology/Chemistry, Chemistry, Cooperative Engineering, Physics and Health Sciences would satisfy this precondition.

In addition to the 6 credits at Lock Haven University, this minor requires a summer to be spent in the Nanofabrication facility at Penn State University, taking 18 credits, learning the techniques and instrumentation in a hands-on industrial/research setting.

Required Courses:

at PSU

NANO201- Materials, Safety and Equipment, Overview for Nanofabrication (3sh)

NANO202 - Basic Nanofabrication Process (3sh)

NANO203 - Thin Films in Nanofabrication (3sh)

NANO204 - Advanced Lithography and Dielectrics for Nanofabrication (3sh)

NANO205 - Materials Modification in Nanofabrication (3sh)

NANO206 - Characterization, Packaging, and Testing of Nanofabricated Structures (3sh)

at LHU

NANO300 - Thin Film Science and Technology (3sh)

NANO458 - Advanced Applied Physics Laboratory (3sh)

Total = 24 sh