

**Lock Haven University**  
**Geology & Physics Department**  
**Bachelor of Science**

**Physics Major; Applied Physics (Nanotechnology) Track**

Effective Fall 2016

<b>Intellectual Foundation</b>	<b>9 sh</b>
<b>Written Communication</b>	<b>3 sh</b>
ENGL100: Composition	3 sh
WC Competency 1	
WC Competency 2	
<b>Oral Communication</b>	<b>3 sh</b>
<b>Mathematical and Computational Thinking</b>	<b>3 sh</b>
Math141: Calculus I	3 sh
<b>Critical Thinking</b>	
CT Competency 1	
CT Competency 2	

<b>Knowledge and Inquiry</b>	<b>21 sh</b>
<b>Natural Sciences Inquiry</b>	<b>6 sh</b>
PHYS170: Intermediate General Physics I	4 sh
PHYS171: Intermediate General Physics II	4 sh
<b>Historical, Behavioral, and Social Science Inquiry</b>	<b>6 sh</b>
<b>Philosophical, Literary, and Aesthetic Inquiry</b>	<b>9 sh</b>

<b>Personal and Social Responsibility</b>	<b>12 sh</b>
<b>Global Awareness and Citizenship</b>	<b>9 sh</b>
<b>Wellness</b>	<b>3 sh</b>
<b>Experiential Learning</b>	
EL Competency 1	
EL Competency 2	

<b>Electives</b>	<b>17 sh</b>

<b>First Year Student Seminar</b>	<b>1 sh</b>
SCI119: First Year Student Seminar	

<b>Major Area and Cognate Courses</b>	<b>60 sh</b>
<i>PHYS170/PHYS171 NSI credits</i>	2 sh
NANO105: Intro to Nanoscale Science	3 sh
#NANO210: Tools & Techniques	3 sh
#NANO304: Generation & Modification	3 sh
#NANO3XX: Characterization	3 sh
#PHYS290: Electronics	4 sh
#NANO458: Advanced Applied Nanotechnology Laboratory	6 sh
<b>total</b>	<b>22</b>
MATH142: Calculus II	3 sh
#MATH243: Calculus III	3 sh
CHEM120: Principles of Chemistry I	4 sh
<b>total</b>	<b>10</b>
#PHYS315: Modern Physics	4 sh
#PHYS330: Mechanics I	3 sh
#PHYS350: Quantum Mechanics	3 sh
#PHYS370: Electricity & Magnetism	3 sh
<b>total</b>	<b>13</b>
<i>Physics/Nano/Technical Electives (13 sh from the list of courses below)</i>	
#PHYS250: Heat	3 sh
#PHYS325: Optics	4 sh
#PHYS331: Mechanics II	3 sh
#PHYS345: Math. Methods of Physics	2 sh
#PHAP400: Modern Optoelectronics	3 sh
#PHAP410: Material Science	3 sh
#MATH301: Differential Equations	3 sh
<b>total</b>	<b>13</b>
# advanced level courses	

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**Suggested Course Sequence**

**Fall Freshman (example)**

ENGL100: Composition (3)  
 SCII19: First Year Student Seminar (1)  
 MATH141: Calculus I (3)  
 NANO105: Intro to Nanoscale Science (3)  
 CHEM120: Principles of Chemistry I (4)  
 Credit Total: 14

**Spring Freshman (example)**

MATH142: Calculus II (3)  
 Wellness (3)  
 PHYS170: Intermed. General Physics I (4)  
 NANO210: Tools & Techniques (3)  
 Elective (4)  
 Credit Total: 17

**Fall Sophomore (example)**

PHYS171: Intermed. General Physics II (4)  
 NANO304: Generation & Modification (3)  
 or NANO 3XX Characterization (3)  
 MATH243: Calculus III (3)  
 Philosophical, Literary, and Aesthetic  
 Inquiry (3)  
 Historical, Behavioral, and Social Science  
 Inquiry (3)  
 Credit Total: 16

**Spring Sophomore (example)**

PHYS330: Mechanics I (3)  
 PHYS290: Electronics (4)  
 Historical, Behavioral, and Social Science  
 Inquiry (3)  
 Philosophical, Literary, and Aesthetic  
 Inquiry (3)  
 Global Awareness and Citizenship (3)  
 Credit Total: 16

**Fall Junior (example)**

PHYS315: Modern Physics (4)  
 NANO3XX: Characterization (3) or  
 NANO304: Generation & Modification (3)  
 Philosophical, Literary, and Aesthetic  
 Inquiry (3)  
 Elective (3)  
 Credit Total: 13

**Spring Junior (example)**

PHYS350: Quantum Mechanics (3)  
 NANO458: Advanced Applied  
 Nanotechnology Laboratory (3)  
 Physics/Nano/Technical Elective (3)  
 Electives (6)  
 Credit Total: 15

**Fall Senior (example)**

PHYS370 Electricity & Magnetism (3)  
 NANO458: Advanced Applied  
 Nanotechnology Laboratory (3)  
 Physics/Nano/Technical Elective (3)  
 Physics/Nano/Technical Elective (3)  
 Global Awareness and Citizenship (3)  
 Credit Total: 15

**Spring Senior (example)**

Physics/Nano/Technical Elective (4)  
 Global Awareness and Citizenship (3)  
 Oral Communication (3)  
 Elective (4)  
 Credit Total: 14